OUTLINES

OF THE

THEORY AND PRACTICE

OF

MIDWIFERY.

BY

ALEXANDER HAMILTON,
M. D. F. R. S. EDIN.
PROFESSOR OF MIDWIFERY IN THE UNIVERSITY,
AND MEMBER OF THE ROYAL COLLEGE OF
SURGEONS, EDINBURGH.

ARTE NON VI.

A NEW EDITION.

EDINBURGH:
PRINTED FOR CHARLES ELLIOT, EDINBURGH;
AND G. G. J. & J. ROBINSON, LONDON.

M,DCC,LXXXVII.

TO

WILLIAM CULLEN, M. D.

FIRST PHYSICIAN TO THE KING
IN SCOTLAND,

AND

PROFESSOR OF THE PRACTICE OF PHYSIC

IN THE

UNIVERSITY OF EDINBURGH;

A GENTLEMAN

NOT MORE CONSPICUOUS FOR

EXTENSIVE KNOWLEDGE

IN EVERY DEPARTMENT OF SCIENCE,

THAN FOR THE MANY

GREAT AND USEFUL IMPROVEMENTS

HE HAS INTRODUCED INTO THE

THEORY AND PRACTICE OF MEDICINE:

THE FOLLOWING

OUTLINES

ARE RESPECTFULLY INSCRIBED,

BY

HIS MUCH OBLIGED AND

MOST HUMBLE SERVANT,

THE AUTHOR.

ADVERTISEMENT.

SINCE the publication of the *Elements of Midwifery* in 1775, continual reflection, and conſtant practice, have produced many changes in different parts of them.

THE firſt rude production of an author unuſed to publication, requires frequent reviſal and copious alterations; but, in another view, this WORK is materially different. In the earlier ſtages, the Author imagined, that Midwifery was in a great meaſure Empirical; and that its principles were few, vague, and uncertain. His opinions were not peculiar; and if he erred, he erred with the greateſt and moſt ſucceſsful practitioners. But he has ſince found, that, though in many reſpects uncertain, the Theory of Midwifery deſerved his attention, as it might often direct the Practice; and that its imperfections were not greater than thoſe of the Theory of Medicine in general, which have not been

thought of ſufficient conſequence to preclude the attention of phyſicians.

With theſe views, he has endeavoured to give at leaſt the rudiments of a complete ſyſtem; and, as the Work was therefore materially changed, it was common juſtice to the world and to himſelf to give ſome information of this change.

But, independent of this principle, the former Title would not NOW have expreſſed the preſent object and deſign; ſo that a work different in matter ought alſo to differ in form.

He is well aware of the importance and difficulty of the attempt; but thoſe who may think that his ſucceſs has not equalled his expectations, ought to reflect, That they contemplate only an UNFINISHED OUTLINE.

EDIN. Aug. 1783.

CONTENTS.

PART I.

ANATOMY *and* PHYSIOLOGY.

CHAP. I. *Of the Pelvis* - 17
Sect. I. *Of the Parts separately* - 18
Sect. II. *Shape and Dimensions* - 26
Sect. III. *Distorted Pelvis* - - 30
Sect. IV. *General Observations* - 37
CHAP. II. *Female Parts of Generation* 41
CHAP. III. *Of the Menses* - 52
CHAP. IV. *Of the Gravid Uterus* - 61
Sect. I. *Of Conception* - - 62
Sect. II. *Structure of the Ovum in early Gestation* - - 65
Sect. III. *Evolution of the Fœtus* - 71
Sect. IV. *Contents of the Uterus in advanced Gestation* - - 74
Sect. V. *Changes of the Uterine System from Impregnation* - - 86
Sect. VI. *Manner of Circulation between the Mother and Fœtus* - 95
Sect. VII. *Circulation in the Fœtus* - 98
Sect. VIII. *Position of the Fœtus* in utero 100
Sect. IX. *Peculiarities of the Fœtus* - 101

Sect. X. *Some subjects connected with Gestation* 104
1. *Superfœtation* - ib.
2. *Ventral Conception* - 106
3. *Monsters* - 107

PART II.

PATHOLOGY.

CHAP. I. *Pathology of Generation* - 110
Sect. I. *Topical Diseases of the Genital Organs* 111
Sect. II. *Irregularities of the Menstrua* - 126
Sect. III. *Diseases sometimes mistaken for Gestation* - - 142
CHAP. II. *Pathology of Parturition* - 145
Sect. I. *Diseases of early Pregnancy* - 147
Sect. II. *Diseases of advanced Pregnancy* 153
Sect. III. *Some ordinary Diseases which require peculiar Treatment when they occur during Pregnancy* - 170
Sect. IV. *Of Floodings and Abortion* - 175
Sect. V. *Management during Pregnancy* 188

PART III.

LABOURS.

INTRODUCTION.

§ 1. *General Observations* - 191
§ 2. *Division of Labours* - 202
§ 3. *Management of Labours* - 205

CHAP.

CHAP. I. *Method of treating Natural Labours* - 207

Sect. I. *Expeditious and easy Labours* - 207

1*st* Stage. *Dilatation of the Orificium Uteri* ib.

2*d* Stage. *Delivery of the Child* - 209

3*d* Stage. *Separation and Expulsion of the Placenta and Secundines* - 211

Management of the Placenta - ib.

1. *Method of removing the Placenta when the Cord is ruptured* - 218

2. *Method of removing the Placenta in Cases of Flooding* - 219

3. *Management of the Placenta in Cases of Spasmodic Contraction of the Uterus* 222

4. *Management in Cases of Morbid Adhesion of the Cake* - 223

Sect. II. *Tedious and Lingering Labours* 226

CHAP. II. *Of Difficult or strictly Laborious Labours* - 263

Sect. I. *Laborious Cases requiring the Hand alone* - - 264

Sect. II. *Instrumental Delivery* - 266

§ 1. *Cases where the Child is intended to be extracted without injuring it or the Mother* - - 267

§ 2. *Cases where the Child must be destroyed by diminishing its Bulk, with a view to preserve the Mother's Life* 285

§ 3. *Cases where it is proposed to enlarge the Dimensions of the Pelvis to procure a safe passage to the Child without materially injuring the Mother* - 303
§ 4. *Method of extracting the Child by the Cæsarean section* - 314

CHAP. III. *Preternatural Labours* - 353
Class I. *When one or both Feet, Knees, or the Breech, present* - 357
Class II. *When the Child lies cross in a rounded or oval form, with the Arm, Shoulder, Side, Back, or Belly, presenting* 373
Class III. *One or both Arms presenting, and the Head following nearly in the same direction* - - 388
Class IV. *Method of Turning the Child while the Membranes are whole, or soon after their rupture. Method of Delivery in Flooding-Cases, and when the Navel-string presents* - 397

CHAP. IV. *Plurality of Children; Monsters; Extra-uterine Fœtuses* - 406
Rules for Delivery, in Cases of Twins, Triplets, &c. - 411
Monsters - - 415
Extra uterine Fœtuses - - 416

INTRODUCTION.

THE following COMPEND of MIDWIFERY was originally intended for the uſe of thoſe gentlemen only who favour the author with their attendance on his lectures. But, after having engaged in the work, the importance of the ſubject induced him to conſider it in a more enlarged view.

Although he cannot lay claim to any particular diſcovery or material improvement in the art, yet he flatters himſelf, that the conciſe and ſimple manner in which the following treatiſe is detailed, will render it not unacceptable to readers of experience. It contains ſome of the moſt eſſential principles of the obſtetrical art; and, ſhould it prove an uſeful aſſiſtant to inexperienced practitioners, or ſuggeſt hints to others better qualified to improve them, the end of this publication will be fully anſwered.

The ſtudy of MIDWIFERY is an object highly intereſting; and has, in all ages, engaged the attention of the moſt diſtinguiſhed of the medical profeſſion. Though ſtill in an imperfect ſtate, its improvements of late, by the labours of men of genius and learning, have been numerous and important.

How few are the modern inſtruments, in compariſon of thoſe employed by the ancients! How ſimple is their conſtruction! And how ſeldom is recourſe had to them! Of late a true ſpirit of obſervation has ariſen, and been directed to the moſt important objects; every diſeaſe has been accurately diſtinguiſhed from thoſe which it more nearly reſembles; and it

may

may with truth be affirmed, that more light has been thrown on this ſubject, within theſe few years, than for above a century preceding. The late publications of Dr SMELLIE, Dr MANNING, Dr HULME, Dr LEAK, Mr WHITE, Mr MOSS, Dr DENMAN, Dr OSBURNE, and others, and the elegant plates of Dr HUNTER, may be conſidered as valuable acquiſitions to the practice of midwifery.

With regard to the plan of the following work, the ſame method has been obſerved which the author purſues in his courſe of lectures. As this plan has ſome peculiarities, it will perhaps be neceſſary to premiſe thoſe reflections which firſt gave occaſion to it; and as they ariſe from the nature of the ſubject itſelf, they will form no unſuitable introduction.

Nothing is more conducive to the proper method of teaching an art, than to conſider its principal object, as well as its immediate relations to thoſe that are moſt intimately connected with it. By this means a diſtinction can be made between thoſe parts to which attention ought to be chiefly directed, and others which would rather embarraſs than aſſiſt our reſearches.

If, for inſtance, the ſeveral parts of medicine be conſidered, their ends will be found to be eſſentially different; and, of conſequence, the means by which theſe ends are accompliſhed will be frequently oppoſite. This is particularly illuſtrated by a little reflection on two different branches of the ſcience, viz. the practice of phyſic, and of ſurgery, ſtrictly ſo called. In the firſt, the nature of the diſeaſe can only be collected from ſymptoms; which, as the ſame ſymptoms proceed from dif-

different and even oppoſite ſtates of the body, muſt ſometimes unavoidably lead into error; and even the ſymptoms themſelves are often ſo contradictory, that nothing can be collected from them; ſo that the phyſician is obliged to proceed on ſome very vague and diſtant analogy. Though theſe difficulties be ſurmounted, the effects of remedies are ſtill uncertain? the real effects of many are not known; and, as they operate, not on an inanimate machine, but on a ſyſtem, in which, from any change, motions are excited frequently oppoſite to thoſe expected, it is not ſurpriſing that the expectations of the phyſician are often baffled. Thus the practice of phyſic cannot be regulated by certain rules; it depends much on the ſtate of the body in health, and the very different changes introduced by diſeaſe: To ſtudy it properly, all theſe ought to be conſidered; and it is this part which is commonly called the Theory of Medicine.

In a ſubject ſo difficult and obſcure as the animal œconomy, it is not ſurpriſing that the practitioner ſhould be often embarraſſed; and that, inſtead of certainty, he ſhould ſometimes be obliged to determine his conduct by probability, or by a looſe and uncertain analogy.

But the views of the ſurgeon are leſs obſcure; he is often confined to caſes where manual dexterity *only* is neceſſary, and has, very generally, the objects of conſideration ſubjected to his ſenſes; and, where they are out of the reach of ſenſe, the ſymptoms are more plain, the inductions fewer, and the concluſions more certain. In this part, then, theory is leſs neceſſary, and only uſeful as it ſeems to connect the ſe-

ſeveral facts: Practice is particularly proper to acquire that firmneſs and conſtancy of mind, and that manual dexterity, ſo eſſential to the ſucceſs and character of a ſurgeon.

Midwifery, which may be defined "The art of facilitating the birth of children," is to be conſidered in much the ſame light as the other parts of ſurgery. Theory is leſs eſſential to it, as it chiefly conſiſts in an operation which requires a dexterity, only to be learned by practice. But, taken in a more enlarged ſenſe, Midwifery may be defined, "The art of facilitating the birth of children, and of managing pregnant and puerperal women." A part of it, therefore, has ſtill a relation to the practice of phyſic; and, as ſuch, muſt be involved in the ſame difficulties and obſcurities.

In this view, then, two objects are chiefly to be attended to:

I. The operation itſelf, with every thing relative to it.

II. The ſtate of the woman after delivery.

To obtain a proper knowledge of the firſt of theſe, it is neceſſary that the ſtructure and functions of the parts themſelves, the ſeveral changes which they undergo, and the cauſes which may prevent or retard either conception, or a proper delivery, ſhould be known. The two firſt of theſe comprehend the Phyſiology of Midwifery; the laſt, what may be called the Pathology.

An attention to the ſtructure of a machine on which we operate, is certainly a point of the greateſt conſequence; and it is particularly ſo in the obſtetrical art,

art, as much of the practice depends on a proper knowledge of the parts: And it is not only the anatomical consideration of every part, but the relations of one part to another, their distances and their inclinations, both with respect to each other, and to other parts of the body, that are absolutely necessary to be attended to. The consideration of their several functions is not so essential, as it contains only hypotheses, which, though sanctified by the authority of great names, are often trifling, generally insufficient and unsatisfactory. These, however, as they are immediately connected with the subject, have not been omitted. Several opinions with regard to the Theories of Generation and Conception, have been concisely mentioned. This may be called the Physiology of Midwifery; for if no disease comes on, a natural delivery at full time may reasonably be expected. But there are many Topical Affections of the parts in the impregnated state, which will influence delivery, either by inducing it prematurely, or preventing it altogether. Many diseases may also supervene in the impregnated state, which will have the same effect; these, therefore, must be considered, and the most approved method of relieving them pointed out. Having thus laid a proper foundation, the Operation itself, with all its material variations, comes next to be explained. This finishes the first, and not the least important part of MIDWIFERY, and concludes the present work.

The second part, or the management of lying-in women, and also of new born children, should fall next to be considered.

The

The management of puerperal women, from the late labours of ſome ingenious accoucheurs already referred to, may now be conducted on a more certain footing; the different diſeaſes, for inſtance, may be diſtinguiſhed with greater accuracy, which is a chief point in conducting the cure. The management, where there is no particular diſeaſe, is now directed by an attention to nature, unencumbered by refinements built on fallacious and uncertain theory. This part the author propoſed for the ſubject of a ſecond volume; but the late publications, already mentioned, have in ſome meaſure anticipitated the intention.

ELEMENTS
OF
MIDWIFERY.

PART I.
ANATOMY AND PHYSIOLOGY.

CHAP. I.
Of the PELVIS.

THE human ſkeleton is divided into the Head, Trunk, and Extremities. The Head includes the Cranium and Face. The Trunk conſiſts of the Spine, Thorax, and Bones of the Pelvis. The latter, which include alſo part of the Spine, are the more immediate objects of the Accoucheur's attention.

The *Pelvis* is an irregular cavity, more nearly approaching to a cylandrical than any other figure; and is chiefly compoſed

of the *Offa Innominata*, the *Os Sacrum*, and *Offa Coccygis*. The two offa innominata conftitute the lateral and anterior parts; the os facrum, and fmall range of bones called the *coccyx*, form the pofterior part. This bony circumference includes a fpace which reprefents the figure of a bafon, from whence the name PELVIS is derived.

To have an accurate knowledge of the Pelvis, it is neceffary, firft, to defcribe feparately the different parts of which it confifts, and then to confider it when thefe parts are united.

SECTION I.

Of the Parts of the Pelvis feparately.

THE *Offa Innominata* are two large expanded bones, which form the fides and fore-parts of the pelvis, and inferior lateral parts of the abdomen. In infancy and childhood, each of thefe bones is divided into three diftinct parts by intermediate cartilages; and tho' afterwards the bones become united, and every appearance of former feparation is nearly obliterated, the

the names by which they were distinguished in younger years are still retained.

1. The *Os Ilium*, or Haunch-bone, is the superior and largest portion of the innominatum. It extends from the semicircular ridge at the superior part, downwards and backwards as far as a transverse section of two-fifths of the *acetabulum* or cavity which receives the round head of the thigh-bone, and forwards to a little below the projection or ridge which forms the brim of the pelvis. Hence a small portion of the *ilium*, only, belongs to the pelvis, the expanded part being placed entirely without the brim. The different parts of the *ilium* are, the superior semicircular ridge or spine, giving rise to several inequalities or prominences, termed *spinal processes;* two broad surfaces, improperly named *dorsum* and *costa;* the small irregular surface by which it is joined to the sacrum posteriorly; the lower, thick, narrow part at the acetabulum; and, the ridge or projection at the inferior anterior part.

2. The *Os Iſchium*, or Seat-bone, called alſo Huckle or Hip-bone, is the inferior lateral portion of the os innominatum. Its figure is very irregular, and its extent may be marked by a line drawn through near the middle of the acetabulum.

The ſeveral parts of this bone are, the Body, Tuberoſity, and Ramus. The Body forms the loweſt and greateſt part of the acetabulum; the ſmall branch, or Ramus, makes up four-fifths of the great hole common to this bone and the Pubis, called *foramen ovale* or *thyroides*; and the inferior bump, flattened by preſſure, is the Tuberoſity which ſupports us in a ſitting poſture. The *tuber* is nearly cartilaginous at birth, and afterwards becomes an *epiphyſe*.

3. The *Os Pubis*, or Share-bone, which makes the anterior middle part of the pelvis, is the ſmalleſt portion of the os innominatum.

Its ſeveral parts are, the Body, Angle, and Ramus. The Body is the ſuperior outer part, by which it is joined to the os ilium: on this is a remarkable criſta, which forms

forms part of the brim of the pelvis. The Angle runs downwards and forwards; and has a rough unequal surface, for the firm adhesion of the thick ligamentous cartilage that connects the bones of the pubes, which is considerably thicker and of a softer texture in females than in males. This articulation is called *symphysis pubis*. The deficiency of bone below, or space between the two rami, is termed *arch of the pubes*.

The three portions of bone just now described, compose the os innominatum of each side; which are connected posteriorly at the sacro-iliac symphysis, and anteriorly at the symphysis pubis, by thick cartilaginous agglutinations. These are strengthened in a very particular manner by strong ligaments at the posterior symphysis, and a double capsular aponeurosis anteriorly *, which seem to render them incapable of seperation, or of any considerable relaxation by the impulse of labour. The bones and cartilages are, however, liable to be softened

* *Vide* Dr Hunter's description of the Articulation of the Pubes, London Medical Observations and Inquiries, vol. ii. p. 333.

ſoftened by diſeaſe, and the ligaments relaxed, *viz.* from ricketty diſpoſition, rheumatiſm, and from debility in conſequence of fevers and other diſorders. The bones may alſo be fractured, or the articulations forced, by mechanical injury, as from falls, bruiſes, &c. and ſuppurations may enſue from internal cauſes as well as accidents.

The poſterior part of the pelvis is made up of the *Os Sacrum*, or Rump-bone, and its extremity the *Coccyx*.

The *Os Sacrum*, called alſo *Os Baſilare* by the ancients, from its uſe in ſupporting the trunk, is, in young ſubjects, compoſed of five or ſix pieces, with intermediate cartilages. It has two ſurfaces, an external and internal: the former is rough and convex; the latter more ſmooth and concave, marked with ſeveral tranſverſe lines, the remains of the intermediate cartilages which formerly connected the ſeveral pieces of bone. The flat ſide is bent, firſt downwards and a little backwards, then conſiderably forwards. The *ſacrum* is of a ſpongy cellular texture; and,

and, in proportion to its ſize, the lighteſt bone of the body. Its figure is triangular, having the ſuperior part for the baſe, with the apex downwards, gradually becoming narrower till it terminates in its appendage the *Coccyx*. The ſuperior part, or baſe, anteriorly, has a ſharp ridge, which makes the poſterior part of the brim of the pelvis. Through the holes by which this bone is perforated, many nerves are tranſmitted. Thoſe of the anterior ſuperior part admit ſome of the largeſt of the whole ſyſtem. The *ſacrum* is articulated above to the laſt vertebra of the loins, in the ſame manner with the true vertebræ. Laterally, it is joined to the oſſa innominata by a deep irregular ſurface, where it forms the ſacro-iliac ſymphyſis, which makes an immoveable ſynchondroſis; and below, it is connected with the coccyx by means of ſtrong ligaments. It is ſecurely guarded from external injuries, by the thick muſcles that cover it behind, and by the ſtrong ligamentous membranes which cloſely adhere to it.

The *Os Coccygis*, which is placed at the

extremity of the *sacrum*, forms the lower posterior part of the pelvis, and inferior terminating point of the spine. Its figure resembles an inverted pyramid. Like the sacrum, it is bent downwards and forwards; having an external convex, and internal concave, surface. It consists, generally, of four pieces of bones, with intermediate cartilages which admit of considerable motion of the bones, in a direction most commodiously adapted for the enlargement of the inferior capacity of the pelvis.

In children, the *coccyx* is almost wholly cartilage; towards the decline of life, the interposed cartilages begin to ossify; and at length the separate pieces are united, and become one bone with the sacrum. The immobility of the *coccyx* is not, however, the only reason why women advanced in life have commonly difficult and laborious births: various reasons also concur, as well as the dryness and rigidity of those parts that are softer and more pliable in younger years.

The

The parts common to the Pelvis are, the *Acetabulum Ossis Femoris*, *Foramen Ovale*, great *Sacro-sciatic Notch*, and the *Brim*.

In the recent subject, this cavity is lined with the *periosteum*, with cartilages, tendons, membranes, muscles, and cellular substance. Internally it is covered chiefly with the *iliacus internus*, the *psoas*, and the *obturatores muscles*; externally, by the *glutæi*, tricipital and pyramidal: the abdominal muscles, with the *peritonæum* and common integuments, defend it before; and the bottom is shut by the *musculi coccygæi*, the sacro-sciatic ligaments, the inferior part of the rectum, its sphincter, and the integuments of the *perinæum*. These parts are chiefly supplied with nerves by the anterior and posterior crural, the obturator, and those of the sacrum; with blood-vessels, by the iliacs.

The pelvis is articulated with the spine at the superior posterior part, and with the ossa femorum below. Its principal uses are, to defend those parts contained in it from external injury, to support the uterus du-

ring

ring geſtation, and to give paſſage to the child at birth. It alſo ſupports the trunk and inferior parts of the body, forming the intermediate connection between them; and is the great centre of motion of the whole machine.

SECTION II.

Of the Shape and Dimenſions of the Pelvis.

THE cavity of the pelvis, or ſpace included within the bones, is of different ſhapes in different ſubjects; and has been ſuppoſed by different authors to approach more or leſs to an oval, elliptic, triangular, or circular form. Its circumference ought to be ſomewhat between an oval and a circle, and to meaſure nearly one-fourth of the height of the body.

The leſſer or true pelvis may be diſtinguiſhed by the *brim*, or ſuperior aperture; and the *bottom*, outlet, or inferior aperture. Conſidered in this point of view, the diameters of its brim and bottom, the width, depth, and form of its cavity, muſt be carefully attended to.

At

At the brim, the largeſt diameter of the pelvis is lateral, the next to it diagonal, and the ſmalleſt from pubes to ſacrum. A well-formed pelvis ought to meaſure nearly five inches and one-fourth laterally; four inches and one-half, or four and three-fourths, diagonally; and four inches and one-fourth from the top of the pubes to that of the ſacrum. Theſe proportions are reverſed at its inferior aperture, where the pelvis is nearly an inch wider from the lower part of the arch of the pubes to the point of the coccyx, when that bone is on the ſtretch, than it is from ſide to ſide: For the diſtance between the tuberoſities of the iſchia is about four inches, or four and one-fourth only; and from the arch of the pubes to the extremity of the coccyx when ſtretched out, five inches, or five and one-fourth.

The pelvis at the ſides is nearly twice as deep as at the fore-part, and almoſt three times deeper behind; viz. from the top of the ſacrum to the point of the coccyx, when extended, ſix inches, four at the ſides, and

two

two only at the pubes. The upper and lateral parts of the pelvis, at the brim, are nearly perpendicular: but the anterior part is ſhallow; and the lateral openings in the recent ſubject are covered with membranous, muſcular, and ligamentous parts, which yield with the coccyx to the preſſure of the child's head, and form a concave nearly equal to that of the ſacrum.—From this conſtruction, added to the curve and concavity of the ſacrum, and mobility of the coccyx, the bottom is conſiderably more capacious, and ſomewhat more circular than the brim.

A line from the ſymphyſis of the pubes, to the junction of the two laſt vertebræ of the ſacrum, is horizontal. And a line that biſects this horizontal line, as well as the two diameters of the brim, makes the axis of the pelvis; and, if produced, will paſs through the umbilicus in an erect poſture; but, if in a reclining poſture, the line that paſſes through the umbilicus will be at right angles to the diameter of the brim: and, in general, whatever is ſaid

of

of the angle which the axis makes with the diameter, is to be underſtood of the diameter of the brim, when the woman is erect; and of the horizontal line, when reclined. But, towards the end of pregnancy, a line to paſs through the centre of the pelvis muſt fall half-way between the navel and ſcrobiculus cordis.

The axes of the different parts of the pelvis, formed by a diagonal, ſhow the curved line of direction which the child's head deſcribes in paſſing; and if theſe axes are ſuppoſed to be prolonged, they give the *déplacement* of the child's body.

The female pelvis differs from the male chiefly in the following particulars: The angle which the vertebræ lumborum make with the ſacrum is more obtuſe, the ilia are more expanded, the concavity of the ſacrum and coccyx is larger, the connection of the coccyx with the ſacrum is looſer, the tuberoſities of the iſchia are placed at a greater diſtance, the ſymphyſis of the pubes is thicker, the arch of the pubes

pubes and the lateral openings are more confiderable, and the pelvis is wider in all its dimenfions.

SECTION III.

Diftorted Pelvis.

THE figure and proportions of the pelvis vary in fome degree in different women; for the depth and form may be fo affected by different degrees of diftortion, as not only greatly to diminifh its cavity, and occafion lefs or more difficulty and danger in delivery, but in fome inftances to fuch a degree as to render the birth of a living child altogether impoffible. As the proportions above defcribed conftitute what is called a *ftandard pelvis*, if it comes fhort of thefe dimenfions, the pelvis becomes faulty or difeafed.

There are different kinds, as well as degrees, of narrow pelves. Sometimes the cavity of the pelvis is conftitutionally fmall, without any deformity. Sometimes there is a narrownefs confined

to the brim; sometimes to the inferior aperture. Sometimes the distortion is general over all the pelvis: And sometimes the capacity is retrenched by an intrusion of the vertebræ lumborum over the sacrum; which may be so considerable, as to reduce the diameter of the brim to the space only of two or three inches, or even less: and this is the species of distortion most frequently observed in practice. The vertebræ of the sacrum may be also, from pressure while in a morbid state, so deformed and protruded, as to render that bone quite straight, and from the same cause often convex instead of concave.

The causes of narrow pelvises are chiefly ricketty affections in infancy; also external violence; such as fractures and dislocation of the bones, &c. The bones also become softened by disease in the adult state; and are then liable to narrowness and distortion, even in women who have formerly had easy labours*; but such cases are

Vide Vol. V. of the London Medical Observations an Inquiries, case of Cæs. Op. by Dr Cooper.

are rare. If the pelvis ſhould not meaſure above two inches and a half from pubes to ſacrum, and not above three laterally, it would be impoſſible to ſave the child at full growth, in any other manner than by enlarging the capacity of the pelvis by an inciſion of the ſymphyſis pubis.

It is often extremely difficult to diſcover a narrow pelvis, eſpecially if the narrowneſs be confined to the brim. We may ſuſpect the diſtortion, from the make and ſhape of the woman. The direction in which the ſpine is diſtorted frequently determines it. But the pelvis is not always affected by a morbid curvature of the ſpine: if that extend, however, to the lumber vertebræ, the pelvis very ſeldom eſcapes; though the moſt certain and infallible diagnoſtic is the diſtortion of the inferior extremities along with a twiſted ſpine. Women who are well proportioned in the lower extremities, have generally good pelviſes. When theſe are ill proportioned or crooked, eſpecially the thigh bones, along with

other ſuſpicious appearances, the pelvis is very generally, though not univerſally, deformed.

We can generally, by the touch, diſcover any ſpecies of diſtortion in the pelvis, below the brim, from the tuberoſities of the iſchia approaching too near each other, from the convexity of the ſacrum, from the difference of ſhape in the arch of the pubes, &c.

When the deformity is at, or above, the brim, and the woman otherwiſe well ſhaped, it is often impoſſible to aſcertain the narowneſs till the labour be conſiderably advanced, and the child's head preſenting in a conical form, with the bones protruding over one another, which are pretty certain marks of a narrow pelvis, or of a very large head.

But in order to underſtand the dimenſions of the pelvis, it will be proper to conſider the ſtructure and form of the head of the fœtus; which, being compounded of different pieces, is admirably well adapted for accommodating itſelf to the figure and diameters of the pelvis.

The figure of the head is ſpheroidal, being compoſed of two ovals a little depreſſed on each other; one of which is ſuperior, called the *cranium*; the bones of which are ſmooth and uniform, with intervening ſpaces, called *ſutures*, that on preſſure allow the bones to yield and ſlide on each other; whereas the bones of the face, which make the anterior oval, are more ſolid, rough, and uneven, and muſt therefore give conſiderable reſiſtance in paſſing through the pelvis.

Eight bones compoſe the *Cranium*, ſix of which are proper, *viz*. the *Os Frontis* and *Occiput*, two *Oſſa Parietalia*, two *Oſſa Temporum*, and two common to *Cranium* and face, the *Ethmoid* and *Sphenoid*. The bones are connected to each other by the *coronel lambdoidal*, *ſagittal*, and *ſquamous* ſutures.

The head is broader behind than before, and the face is broader above than below.

On the upper part of the cranium, where the ſagittal and coronal ſutures croſs each other, is a membranous ſpace called the *fontanella* or *open of the head*.

The point from which the hair diverges is called the *vertex*.

The head, like the pelvis, has different diameters. The ordinary dimensions at birth are as follows:

From the os frontis to the occiput, between 4 and $4\frac{1}{2}$ inches; or, according to Dr Burton, $4\frac{3}{10}$ inches.

Laterally, from temple to temple, 3 inches.

Laterally, at the posterior part, $3\frac{1}{2}$ inches.

From the top of the head to the nape of the neck, $3\frac{6}{10}$ inches *.

The length of the face from the chin to the forehead, is about $5\frac{1}{4}$ inches.

The length of the whole head from chin to vertex, about $5\frac{1}{2}$ inches; and when the vertex is stretched out in laborious births, about 6 or 7 inches.

The total circumference of the head, between 12 and 14 inches, or somewhat more.

The breadth of the body at the shoulders, is about 5 or 6 inches.

* See Dr Burton's New System of Midwifery, table 1. fig. 3. and 4.

The breadth of the body at the breech, about 5 inches.

The circumference of the body at ſhoulders and breech, from 15 to 18 inches.

The length of the whole body, 20 or 21 inches.

Conſidering the ſtructure, form, and diameters of the pelvis and child's head, the application, in regard to the mechanical deſcent of the head through the pelvis, is ſufficiently obvious; but, as the bulk and diameter of the one is not always mathematically adapted to the capacity of the other, difficulties muſt ſometimes ariſe. Hence the advantage of this peculiar ſtructure and mechaniſm of the *cranium:* for if the child's head were one firm oſſified body, whoſe dimenſions at any time exceeded thoſe of the cylindrical cavity through which it ſhould paſs, however mechanically and with whatever force it deſcended, the delivery could not be accompliſhed without extraordinary aſſiſtance; and the conſequences would always prove fatal either to mother or child.

The

The ſhoulders are alſo capable of conſiderable diminution by preſſure; and the ſeparation of the oſſa innominata in the fœtus may contribute, ſomewhat, to facilitate the paſſage in birth. For living children are often brought into the world without artificial aſſiſtance, the bulk of whoſe bodies conſiderably exceeds the largeſt diameter of the pelvis.

SECTION IV.

General Obſervations.

1. THOUGH the cartilaginous ſymphyſes at the anterior and poſterior parts may be, in ſome degree, relaxed in time of labour, it appears ſufficiently obvious, from a ſuperficial view of the ſtructure and articulation, that the bones are incapable of ſeparation ſufficient to enlarge, in any ſenſible extent, the capacity of the pelvis, but in conſequence of diſeaſe, or from violence. In that ſtate the bones may be forced by the throes of labour; but the woman becomes lame, and generally continues ſo for life.

2. Such a ſeparation may, however, be procured by inciſion at the ſymphyſis pubis, in general, though not always with ſafety to the mother; and a child, which would otherwiſe infallibly be deſtroyed, may by that means be extracted alive. The ſucceſs of this operation, ſince firſt performed by Monſ. Sigault, is not yet ſufficiently eſtabliſhed to enable us to ſpeak of it in a deciſive manner, nor to point out the particular circumſtances in which it may be attempted with propriety. But we may here obſerve, that it cannot, in caſes of difficulty and danger, be performed with an abſolute certainty of preſerving either the mother or child, from the difficulty of aſcertaining the real dimenſions of the pelvis, and of the increaſed ſpace to be gained by the operation.

3. The ſhape and conſtruction of the child's head, which admits of conſiderable diminution by preſſure, ſufficiently compenſate for the want of motion of the bones of the pelvis: for the head is of an oval or ſpheroidal figure, and the mem-

branous ſutures permit a free play of the cranial bones by the force of labour. But in different ſubjects it varies in ſhape, ſtructure, and ſolidity. Hence, in paſſing through the capacity of the pelvis, it will not always be commodiouſly modelled to ſuffer that diminution of its bulk, from preſſure, which may be neceſſary. If, therefore, the volume of the child's head be diſproportioned to the diameters of the brim or outlet of the pelvis, or if the long axis of the one be applied in an improper direction to the other, difficulties will occur that will require extraordinary aſſiſtance.

4. It is therefore of the utmoſt conſequence to know the figure, ſtructure, mode of poſition of the child's head, and the ſhape and proportions of the different openings of the pelvis; and to remember, that theſe proportions are reverſed in the ovals of the poſterior and inferior apertures; that the depth of the ſuperior part is to the anterior as three to one, and to the ſides as three to two.

5. Theſe proportions are, however, liable to conſiderable variation in different ſubjects; and the whole pelvis may become ſo affected, as to have its brim, depth, and inferior aperture, conſiderably retrenched and diminiſhed, either from an original mal-conformation, from bruiſes, poſtures, &c. or from diſeaſe.

6. Thoſe women who appear, from ſome diſtortions, to have been ſubject to rickets, have probably a contracted pelvis; and the probability is greatly ſtrengthened if the lower extremities have ſuffered.

7. Deformities of the ſpine from other cauſes do not generally influence the pelvis; ſo that every woman apparently crooked, has not always a laborious and difficult birth.

8. All the different diſtortions of the pelvis may be accounted for from the preſſure of the body on the bones previouſly ſoftened by diſeaſe, *viz.* by the preſſure of the upper parts on the ſpine, and by that of the whole body on the oſſa iſchia and pubis.

CHAP. II.

Female Parts *of* Generation.

THE organs of generation, ſo called from their uſe in propagating and increaſing the ſpecies, are divided into *external* and *internal.*

The external parts are, the *mons veneris*, the *labia externa*, the *labia interna alæ minores* or *nymphæ*, the *clitoris* with its glans and præputium, the orifice of the *urethra*, the *os externum*, membranous expanſion called *hymen*, *carunculæ myrtiformes*, *ſphincter vaginæ*, and glands of the parts.

The internal parts are, the *vagina;* the *uterus*, with the ligaments, *ovaria*, and Fallopian tubes; and the blood-veſſels and nerves of the parts.

The contiguous parts are, externally, the *anus*, *ſphincter ani*, and *perinæum;* internally, the bladder, *urethra*, and *rectum.*

The

The *mons veneris* is nothing more than the ſkin raiſed by a quantity of adipoſe ſubſtance collected under it, that cuſhions it up externally in the form of a tumor. From the lower part of which the great *labia* begin, and run downwards, till they are bounded by the perinæum, or by what the French call *fourchette.* In their ſtructure they are cellular, but more ligamentous than the mons veneris. Their inner ſurface is villous and glandular, ſeparating a ſebacious kind of liquor analogous to that about the corona glandis of the male.

Upon ſeparating the labia externa, a red projecting body appears, called *clitoris*, compoſed of two crura, which ariſe from the lower part of the oſſa pubis, approach one another, and form the body of the clitoris, whoſe extremity is its *glans*, covered with a looſe doubling of the ſkin, called *præputium.*

The *nymphæ* are placed immediately within the external labia, and are continued downwards and forwards on the anterior

ſymphyſis pubis nearly as far as the orifice of the urethra. They are productions or folds of the integuments reſembling fræna, and very vaſcular. When the labia externa are open, they will devaricate; and when ſhut, come into contact.

Downwards from between the nymphæ runs a ſmooth *foſſa*; at the bottom of which is a prominence, in the centre of which is the *orifice* of the *urethra*. Its uſual ſituation is nearly oppoſite to the inferior extremities of the nymphæ.

Below the urethra is the aperture into the vagina, called *os externum*; which has round its orifice the *carunculæ myrtiformes*, ſuppoſed to be the remains of the ruptured hymen (a membrane peculiar to infancy, that ſurrounds the entry of the vagina in form of a creſcent): but many anatomiſts deny that theſe carunculæ are formed from the lacerated hymen, and maintain that they exiſt previous to its rupture.

The *ſphincter vaginæ* is a flat muſcle, coming out inſenſibly from the perinæum, and is loſt chiefly in the crura clitoridis.

In

In very muſcular ſubjects, its fibres run quite round the vagina. There is a plexus of nerves and blood-veſſels, called *plexus reteformis*, that goes up on the inſide of this muſcle, and communicates with the clitoris; which, of conſequence, will be compreſſed between it and the penis in coition.

The *glands* of theſe parts are ſituated in ſuch a manner, that, upon preſſure, a conſiderable quantity of viſcous humour is thrown out in time of coition; ſo that by many this liquor was thought to be the *ſemen fœmineum.*

The ſtructure of theſe parts renders them all calculated for nearly the ſame purpoſe, *viz.* to give titillation *in coitu.* The clitoris is ſituated in the part where it is moſt expoſed to friction by the introduced penis: its uſe, therefore, chiefly, is to render the ſenſation *in coitu* more exquiſite. Theſe parts, in proportion to their ſenſibility, are exceedingly irritable, and ſubject to conſiderable inflammation and tumefaction even in the eaſieſt labours.

Hence

Hence the impropriety and hazard of *officious touching* in the beginning of labours, while the preſenting part of the child is at a diſtance, while the paſſage is narrow and tight, and not yet ſufficiently relaxed by the lubricating mucus which is afterwards ſo plentifully thrown out for the purpoſe. The orifices of theſe parts, obſerving the direction of the ſacrum and perinæum, do not run ſtraight out, but downwards and forwards; by which the vagina, uterus, and rectum, are in leſs danger of protruſion. In the introduction of the catheter, the point ſhould therefore be directed, firſt a little downwards and backwards, then gently raiſed forwards and upwards, rather than quite ſtraight.

The *vagina*, or paſſage to the womb, lies immediately under the bladder, and upon the rectum. It is commonly in length about four or five inches: but this differs in different ſubjects, and at different ages: as alſo its diameter, which is narrow and contracted in young women, but

but capable of very conſiderable dilatation; for in virgins it is full of rugæ, but ſmoother in married women and thoſe who have born children. It is compoſed of a plexus of muſcular fibres, and a rugous membrane; and its ſtructure is alſo nervous and glandular. Its internal coat is continued upwards, and makes the inner covering of the uterus.

The vagina and body of the uterus are connected with the bladder, a good deal higher up than with the rectum.

The vagina leads to the os uteri, which projects a little into that cavity, and advances rather more forward in the lower poſterior than in the upper anterior part.

The *uterus* lies in the middle of the pelvis, looſely, between the rectum and bladder; but its poſition is liable to variation at different periods of life, and is affected by various other circumſtances. It is triangular, of the figure of a pear or ſmall powder-flaſk, and generally about three inches long, ſomewhat convex on

its

its ſuperior part, and, by preſſure, a little flattened below.

It is divided into its cervix or collum, and fundus. On being cut open, it appears of a compact ſolid ſubſtance, broader at its upper part, and narrower at the neck; its cavity is very inconſiderable in the unimpregnated ſtate, for the ſides of the plane almoſt come in contact. Though its ſtructure is muſcular, its muſcular fibres can with difficulty be traced: They appear to be moſtly circular; but are very difficult to unravel. Its veſſels proceed from the ſpermatics and hypogaſtrics. The arteries are very ſmall in proportion to the veins; which, in time of geſtation, are ſo much dilated, as to have obtained the name of *ſinuſes*. Its nerves come from very ſmall filaments; and are chiefly furniſhed from the intercoſtals, thoſe of the ſacrum, and the ſympathetici maximi. It is alſo ſupplied with lymphatic veſſels.

The uterine *ligaments* are of two kinds; the *ligamenta lata*, and the *ligamenta rotunda*. The former are no more than part of the peritonæum,

peritonæum, which, after giving a coat to the uterus, goes out laterally to form theſe ligaments; and are therefore only doublings of that membrane, like the meſentery to the inteſtine. Through theſe doublings the veſſels of the uterus run. They have two folds in their upper part: The anterior contains the Fallopian tubes; the poſterior, the ovaria.

Each of the ligamenta rotunda is a little plexus of muſcular fibres, nerves, and veſſels, enveloped in a common membrane, in the form of a cord or ligament, coming down before the Fallopian tubes, and going out at the rings of the abdominal muſcles to be loſt in the groin.

In the anterior plica of the broad ligaments the *Tubæ Fallopianæ* are contained. They have one extremity fixed to the fundus uteri, where the perforation is ſo ſmall it will hardly admit of a hog's briſtle; but the diameter gradually enlarges, becoming wider and wider, like a trumpet, till it terminates in a looſe floating extremity called *Morſus Diaboli.* This cavity is not ſtraight,

but convoluted: When inflated, it ſeems to be ſtrung upon the broad ligament, as the inteſtines are upon the meſentery.

The *ovario* are two flattened oblong bodies, not very unlike the male teſtes, ſituated at the ſides of the uterus, on the poſterior part of the ligamenta lata. Their ſhape and ſize are different in different women: Their outer ſurface is divided by a number of chops; but is ſmoother and more uniform in virgins than in married women who have had children. There is little to be obſerved in their texture, except a number of veſſels, and ſomething like veſiculæ or water-bags; theſe were ſuppoſed to be the ova, remarkable in the ovaria of quadrupeds. When a woman dies with child, one particular cavity is obſerved, which was thought to be the calyx from whence the ovum had dropped, and is called *corpus luteum*: but later phyſiologiſts think that theſe corpora lutea are glands, containing the female ſemem, which in the time of coition burſt and throw out their contents into the tube in form of a liquid;

 which,

which, when mixed or blended with the ſeminal fluid of the male, is ſuppoſed to be conveyed through the tube into the uterus, to become the rudiments of the future fœtus. Moſt of the phenomena of impregnation correſpond with this theory. Fœtuſes have been found in the cavity of the abdomen, where there has been no rupture of the uterus; and bones have made their way through the belly, while the uterus has been found perfectly ſound.

Contiguous to the genital parts are, externally, the *anus* and *perinæum*; internally, the *rectum*, *urethra*, and *bladder* of urine.

The *anus* is the orifice of the rectum, which is the centre of axis of the pelvis. It is contracted into rugæ by a plexus of muſcular fibres called *ſphincter ani*, which anſwers nearly the ſame purpoſe as it does in the male, and is loſt in the perinæum, inſtead of the bulb of the urethra.

The *rectum* runs in a line, not quite ſtraight, behind the vagina and uterus, in the hollow part of the ſacrum, through the

capacity

capacity of the pelvis, and is ſupported upon the coccyx and muſcles below, as in the male.

The *urethra* is about an inch and a half long; has no regular proſtate, like the male; but is ſupplied with a number of ſmall glandular bodies, placed along the whole interior ſurface.

The *bladder* is ſituated over the vagina and uterus immediately behind the pubes; and is ſuppoſed to be larger and more capacious than in the other ſex.

As the vagina and urethra lie between the rectum and bladder, any diſorders in the one will readily bring the other into ſympathy.

The *perinæum* is the ſeptum or ſpace between the os externum vaginæ and the anus. It is chiefly made up of the ſphincter ani and vaginæ muſcles, the common integuments, and cellular ſubſtance. In its natural ſtate it does not much exceed an inch in length, but is conſiderably ſtretched in time of labour.

CHAP. III.

Of the MENSES.

BEFORE we proceed to treat of the different theories of Conception and Generation, it will be neceſſary to conſider a particular phenomenon, that begins to appear in women about the age of puberty, viz. the menſtrual flux.

At the age of 13 or 14 years, and nearly at the ſame time that the ſemen begins to form itſelf in the male, a conſiderable change happens to the female: for at this time the blood begins to circulate with an increaſed force; the pubes begins to be covered with hair, the breaſts to ſwell, and the menſes to make their appearance. The veſſels of the womb, which in the fœtus tranſuded a thin whitiſh liquor, and in the young girl a ſort of ſerum, begin now to ſwell with blood, and to depoſite ſome of it in the cavity of the uterus. They con-

tinue ſo to do for ſome days, commonly three, four, or five; when the uterine veſſels gradually contract themſelves, and only allow a little ſerous moiſture to paſs as before, till again, at the end of three or four weeks, they open and diſcharge a like quantity of blood. This evacuation continues to return periodically, till about the 45th year, though with ſome it continues longer, and with others it ſtops ſoon after the 40th, or between this and the 50th year.

This diſcharge from the uterus does not flow in a ſtream, but gently drills for three, four, or five days; though moſt commonly for three only. The quantity generally evacuated is between 5 and 10 ounces.

The periodical returns are not the ſame in all women; which variety chiefly depends on conſtitution, manner of life, and climate. But ſuch an evacuation, at nearer or more diſtant periods, ſeems eſſentially neceſſary both for health and generation. Where it is either deficient or irregular,

bad health is generally the conſequence; and women who have paſſed the age of puberty, for ſeveral years, without any appearance of the menſtrual diſcharge, very generally prove barren.

The cauſe of this periodical evacuation, peculiar to the females of the human ſpecies, has been a curious and perplexing ſubject of inquiry in all ages.

In the infancy of medicine, when fancy more than judgment influenced the theory, it is not ſurpriſing that the moſt chimerical reaſons ſhould have been given, to account for an appearance ſo ſtriking and ſo important. Thus it was attributed to the influence of the moon, from its periodical appearance; to a ferment in the fluids, when fermentation was introduced to account for every phenomenon. Men, in other views reſpectable, have exerted all their ingenuity in defence of theſe theories; but they are now exploded, and the catamenia are ſuppoſed to ariſe from an univerſal plethora, or a topical congeſtion: theſe opinions we ſhall proceed to examine.

From a ſuperficial view of the ſeveral phenomena, it would appear probable that the menſes are occaſioned by plethora. But this idea of itſelf is vague, and will not account for all the appearances. By plethora we underſtand, a larger quantity of blood than is adapted to the capacity of the veſſels, either of the whole ſyſtem, or of any particular part. This may depend on the increaſe of the abſolute quantity of the fluids; or on a conſtriction of the veſſels. It is the former of theſe that ſeems to be meant by the advocates for a general plethora; and the chief arguments ſeem to be derived from the debility, inactivity, and ſwelling of the breaſts. The two former, though often depending on plethora, may be produced by many other cauſes; ſo that no argument can be drawn for them. The laſt by no means ſhows an increaſed quantity of the fluids in general; it ſeems much connected with the ſtate of the uterus, and takes place in ſtates of the ſyſtem very diſadvantageous for a general fulneſs. We may, with ſome confidence, therefore,

reject an opinion that has many direct arguments against it. For many of the symptoms are not to be explained by plethora, or by any other supposition.

A late and probable opinion is, that "the MENSES depend on a TOPICAL CON-"GESTION." This opinion has been for some time delivered at this university by the ingenious Dr CULLEN; and is supported, not only by the most plausible arguments, but by its consistency with many other appearances in the human body. We shall content ourselves with giving a short view of it, which may enable those to form some judgment who have not had an opportunity of hearing it from himself.

He observes, "that the growth of the body depends upon the increase of the quantity of fluids giving occasion to the distention of the vessels, and thus producing the gradual evolution and full growth of the whole system. This evolution does not happen equally in every part of the body at the same time, but successively according to the different size and density of

of the ſeveral veſſels determined by the original ſtamina. Thus the upper parts of the body firſt acquire their natural ſize, and then the lower extremities. By the ſame conſtitution it ſeems to be determined, that the uterus of the human ſpecies ſhould not be conſiderably evolved, till the reſt of the body is nearly arrived at its full bulk. But as the veſſels of every part, by their diſtention and growth, increaſe in denſity, and give thereby more reſiſtance to their further growth, at the ſame time, by the ſame reſiſtance, they determine the blood in greater quantity into the parts not yet equally evolved. By this means the whole of the ſyſtem muſt be ſucceſſively evolved, till every part is brought to that degree of diſtention which is neceſſary to bring them to a balance in reſpect of denſity and reſiſtance with one another. Upon theſe principles, there will be a period in the growth of the body, when the veſſels of the uterus will be diſtended till they are in balance with the reſt of the ſyſtem; and their conſtitution may be ſuch, that

that their diſtention may proceed ſo far as to open their extremities, terminating in the cavity of the uterus, ſo as to pour out blood there; or it may happen, that a certain degree of diſtention may be ſufficient to irritate and increaſe the action of the veſſels, and thereby to produce an hæmorrhagic effort, which may force the extremities of the veſſels, with the ſame effect of pouring out blood.

"In either way, he accounts for the firſt appearance of a flow of blood from the uterus in women. In order to this, he does not ſuppoſe any more of a general plethora in the ſyſtem, than what is conſtantly neceſſary to the ſucceſſive evolution of the ſeveral parts of it; and he proceeds upon the ſuppoſition, that the evolution of each particular part muſt eſpecially depend upon the plethora, or increaſed congeſtion, in its proper veſſels. Thus he ſuppoſes it to happen with reſpect to the uterus; but as its plethoric ſtate, he obſerves, produces an evacuation of blood from its veſſels, this evacuation muſt

empty

empty theſe veſſels more eſpecially, and put them again into a relaxed ſtate with reſpect to the reſt of the ſyſtem. This emptied and relaxed ſtate of the veſſels of the uterus will give occaſion to a new congeſtion of blood in them, till they are again brought to that degree of diſtention that may either force their extremities, or produce a new hæmorrhagic effort, that may have the ſame effect. Thus an evacuation of blood from the uterus, being once begun by the cauſes before mentioned, it muſt, by the operation of the ſame cauſes, return after a certain period, and muſt continue to do ſo till particular circumſtances occaſion a conſiderable change in the conſtitution of the uterus. What determines the periods of theſe returns to be nearly in the ſpace of a month, he cannot exactly explain; but ſuppoſes it to depend upon a certain balance between the veſſels of the uterus and thoſe of the other parts of the body. This muſt determine the firſt periods; and when it does ſo, it cannot be underſtood, that a con-

ſiderable

ſiderable increaſe or diminution of the quantity of blood in the whole ſyſtem will have but little effect in increaſing or diminiſhing the quantity diſtributed to the uterus. It may alſo be further obſerved, that when the evacuation has been repeated for ſome time at regular periods, it may be ſuppoſed that the *power of habit*, which ſo readily takes place in the animal ſyſtem, may have a great ſhare in determining the periodical motions of the uterus to be with great regularity, tho' in the mean time conſiderable changes may have happened with reſpect to the whole ſyſtem.

This theory, though ſtill liable to objections, ſeems, however, as rational as any opinion that has yet been advanced: nor ſhall we ever perhaps be able clearly to inveſtigate the ſecret principles upon which this, and many other phenomena of the animal œconomy, equally intricate and myſterious, depend.

CHAP.

CHAP. IV.

Of the Gravid UTERUS.

THIS ſubject comprehends the theory of conception; the ſtructure and increaſe of the ovum in early geſtation; the evolutions of the germ in its different ſtates of embryo and fœtus; the contents of the gravid uterus in advanced geſtation, and changes which the uterine ſyſtem ſuffers during the progreſs; the mode of circulation between the mother and fœtus, and within the body of the fœtus, its peculiarities, &c.; and ſome ſubjects connected with geſtation, as extra-uterine conception, ſuperfætation, and the generation of monſters.

SECTION I.

Of Conception.

THE theory of conception is as intricate and obſcure as the cauſe of the periodical evacuation of the catamenia; and many circumſtances relating to generation will, perhaps, ever remain a myſtery. The different hypotheſes ſuggeſted on the ſubject may, however, be referred to the following.

I. To thoſe who think that the rudiments of the fœtus are contained in the mother.

II. To thoſe who are of opinion that they exiſt in the male.

III. To thoſe who imagine the fœtus reſults from an union of both.

That each of theſe ſyſtems has had its ſeveral ſupporters and antagoniſts, will not be ſurpriſing, when we conſider the obſcurity of the ſubject, as well as the extent of learning and brilliancy of imagination which have extinguiſhed the ſe-

veral combatants. HARVEY, our illuſtrious countryman, belongs to the firſt claſs; the acute LEEUWENHOEK, who perceived living animals, or bodies which reſembled them, in the ſemen maſculinum, has added luſtre to the ſecond; and the Count de BUFFON, whoſe ingenuity and acuteneſs are diſtinguiſhable even in an enlightened nation, is the chief ſupporter of the third opinion.

We ſhall conſider, at ſome length, their ſeveral ſyſtems in another place; it is enough, at preſent, to obſerve, that the pride of ſcience, and brilliancy of imagination, have been equally unſucceſsful. To elude difficulties which they cannot conquer, modern philoſophers have endeavoured to transfer the queſtion; and by ſuppoſing the animal already to exiſt complete in its ſeveral parts, but of an aſtoniſhing minuteneſs, have rather laboured to ſhow by what means it is animated, and by what aſſiſtances evolved.

This view, when extended to ſucceſſive generations, at firſt ſtartles the modeſt in-

quirer

quirer by its apparent abſurdity, and perplexes the moderate calculator. It, however, is not more contradictory than many phyſiological poſitions which have never been controverted; and it is ſome addition to its credit, that it is ſupported by BONNET and HALLER. On this foundation, which is ſupported alſo by the authority of HARVEY, the *principle of animation* muſt be the *ſemen maſculinum*; and it is not entirely without reaſon, that BONNET conſiders it as the firſt and chief ſupport of the fœtus: but an extenſive period is required to evolve the ſeveral very intricate organs of which the human frame conſiſts.—The embryo is, at firſt, almoſt entirely vegetative: it adheres to the fundus uteri, and extracts the fluids of its mother without any exertions that are peculiarly its own. But it ſoon ſhows ſome marks of animation. Its heart is obſerved to beat: it ſeems to prepare fluids for its own purpoſes, and to ſeparate thoſe which are no longer beneficial: in ſhort, it acquires a diſtinct ſyſtem; from part of which it is ſupplied

with

with the original portion of its fluids; and which it, in its turn, ſupplies with the ſame fluids more highly elaborated, and more carefully prepared. But this rather belongs to the hiſtory of the ovum, which we ſhall next conſider.

SECTION II.

Structure of the Ovum in early Geſtation.

WHEN the germ is conveyed into the uterus, *impregnation* is ſaid to take place. The ovum, ſoon after its introduction, adheres to ſome part of the internal ſurface of the uterus: at firſt it appears like a ſmall veſicle, ſlightly attached; and gradually increaſes in bulk, till it apparently comes in contact with the whole cavity of the fundus.

The embryo, or unformed fœtus, with placenta, umbilical cord, membranes, and waters, in early geſtation, conſtitute the ovum; which then appears like a thickened fleſhy maſs, the more external lamellæ and other parts, which are afterwards ſe-

parate and diſtinct, being blended and jumbled in ſuch a manner that they cannot be readily diſtinguiſhed or traced.

In the progreſs of geſtation, the external lamella, or membranous ſurface, by ſtretching, grows thinner; the cavity which contains the rudiments of the fœtus becomes more apparent; and then a thick vaſcular part on the outſide of the chorion, called *placenta*, can be readily diſtinguiſhed from the membranous portion of the ovum.

The external membranous part of the ovum (or bag which contains in its cavity the embryo, funis, and watery fluid in which the embryo floats) is originally compoſed of three coats: the internal lamella, or that next the fœtus, is called *amnios*; the next is the *true chorion*; and the external is called the *falſe* or *ſpongy chorion*. But it is ſuppoſed to derive an extraordinary lamella immediately from the uterus, which conſtitutes the external covering of the ovum. This production, which is ſuppoſed to be entirely formed

by

by a continuation of the internal membrane of the uterus, is at first loosely spread over the ovum, and afterwards comes in contact with the false chorion. These two lamellæ, which form the external vascular surface of the ovum, are much thicker than the internal membranes of the true chorion and amnios; and the proportion which they bear to the other parts is so great, that, in early conception, the mass of the ovum is chiefly composed of them. Dr Ruysch called this exterior coat the *tunica filamentosa*; more modern authors, the *false* or *spongy chorion*. But Dr Hunter has found the spongy chorion to consist of two distinct layers: that which lines the uterus he stiles *membrana caduca* or *decidua*, because it is cast off after delivery; the portion which covers the ovum *decidua reflexa*, because it is reflected from the uterus upon the ovum, forming the connecting medium between them. The portion which covers the ovum is a complete membrane, like the true chorion and amnios: but that which immediately lines the uterus is imperfect or deficient, being

perforated with three foramina, *viz.* two ſmall ones, correſponding with the inſertion of the tubes at the fundus uteri; and a larger ragged perforation oppoſite to the orificium uteri *.

Thus, according to Dr Hunter, the embryo, on its firſt formation in the ovum, and the fœtus during the whole time of geſtation, is incloſed in four membranes, *viz.* the double, falſe, or ſpongy chorion, called *membrana decidua*, and *decidua reflexa;* the true chorion, and the amnios, which include a fluid called the *liquor amnii*, in which the embryo floats.

The true chorion and the amnios are decidedly organized membranes, containing veſſels, and compoſed of regular layers of fibres. The decidua, and decidua reflexa, differ in appearance, and ſeem to reſemble thoſe inorganic ſubſtances which connect inflamed viſcera. If they be original membranes, and only viſible from their evolution and increaſe, it is not eaſy to conceive how the ovum gets behind them,

* See Dr Hunter's Tables, Pl. xxxiv. fig. 5 & 6.

them, ſince the Fallopian tubes are not covered by them. We are therefore inclined to adopt an opinion ſuggeſted firſt by Mr Falconer and Mr Crookſhanks, and rendered probable by the experiments of Signor Scarpa, "That they are entirely com"poſed of an inſpiſſated coagulable lymph," in a manner that we ſhall have occaſion to explain.

Between the amnion and chorion a quantity of gelatinous fluid is contained in the early months; and a ſmall bag, or white ſpeck, is then obſerved on the amnion, near the inſertion of the umbilical cord. It is filled with a white liquor, of a thick milky conſiſtence; and is called *veſicula umbilicalus*, *veſicula alba* or *lactea*: it communicates with the umbilical cord by a ſmall funis, which is made up of an artery and vein. This veſicle, and duct or tube leading from it, are only conſpicuous in the early months; and afterwards become tranſparent, and of conſequence inviſible*. Their uſe is not yet underſtod.

* *Vide* Dr Hunter's elegant Plates of the Gravid Uterus, Pl, xxxiv. fig. 2.

Though the bag, or external parts of the conception, at firſt form a large proportion of the ovum in compariſon of the embryo or fœtus, in advanced geſtation the proportions are reverſed. An ovum between the eighth and ninth week after conception, is nearly about the ſize of a hen's egg, while the embryo ſcarcely exceeds the weight of a ſcruple: at three months, the former increaſes beyond the magnitude of a gooſe's egg, the weight above eight ounces; but the fœtus does not then amount to three ounces: at ſix months, the fœtus weighs twelve or thirteen ounces, and the placenta and membranes only ſeven or eight: at eight months, the fœtus generally weighs ſomewhat more than five pounds, the ſecundines little more than one pound: at birth, the fœtus weighs from ſix or ſeven to nine pounds, which it rarely exceeds*; but the placenta ſeldom increaſes much

* Natura ſibi ſemper conſtans manet, conſuetum maturorum fœtuum pondus eſſe inter 6 et 7 libras civiles medium; rarius 9 libras excedere.—Henr. Aug. Wriſbergii Obſ. Anatomicæ, &c. Goettingæ, 1779.

much in bulk from between the ſeventh and eighth month.

Having deſcribed the ovum in early geſtation, we ſhall next take a view of the germ; trace the progreſs of the embryo and fœtus; then reſume the ſubject of the ovum, to explain the ſtructure of the membranes, placenta, &c. in advanced geſtation, and point out the moſt remarkable changes which the uterus ſuffers during impregnation.

SECTION III.

Evolution of the Fœtus.

THERE can be little doubt that all the parts of an animal exiſt completely in the germ, though their extreme minuteneſs and fluidity for ſome time conceal them from our ſight. In a ſtate of progreſſion, ſome of them are much earlier conſpicuous than others.

The embryo, in its original ſtate, is probably entirely fibrous and nervous; and theſe primary parts ſeem to contain, in a ſmall ſcale, all the others which are afterwards to be progreſſively evolved.

Of the former the heart and liver, of the latter the brain and ſpinal medulla, firſt become conſpicuous: for the ſpine or carina of the embryo is formed ſome time before any veſtige of extremities begin to ſprout. The encephalon, or head, and its appendages, firſt appear; then the thoracic viſcera; next, the abdominal: at length the extremities gradually ſhoot out; the ſuperior firſt, then the inferior: and, by ſlow and inſenſible gradation, the beautiful and admirable ſtructure of the whole complicated ſyſtem is evolved.

As ſoon as the embryo has acquired ſufficient conſiſtence to be the ſubject of any obſervation, a little moving point, which is the heart, diſcovers itſelf. Nothing, however, but general circumſtances relating to the particular order and progreſs of the ſucceſſive germination or evolution of the viſcera, extremities, vaſcular ſyſtem, and other parts of the human fœtus, can be aſcertained, as it is beyond the power of anatomical inveſtigation.

It is alſo exceedingly difficult to determine the age or proportional growth of the

the fœtus. The judgment we form will be liable to confiderable variation: 1ft, From the uncertainty of fixing the period of pregnancy; 2dly, From the difference of a fœtus of the fame age in different women, and in the fame woman in different pregnancies; and, laftly, Becaufe the fœtus is often retained *in utero* for fome time after the extinction of its life.

The progrefs of the fœtus appears to be much quicker in the early than latter months: but the proportional increafe is attended with difficulty in the calculation; for this, among other reafons, that we have not an opportunity of knowing the magnitude or weight of the fame fœtus in different months. It will alfo, probably, be materially influenced by the health, conftitution, and mode of life, of the parent.

A fœtus of four weeks, is near the fize of a common fly; it is foft, mucilaginous, feems to hang by its belly, and its bowels are only covered by a tranfparent membrane. At fix weeks, the confiftence is ftill gelatinous,

gelatinous, the ſize about that of a ſmall bee, the head larger than the reſt of the body, and the extremities then begin to ſhoot out. At twelve weeks, it is near 3 inches long, and its formation pretty diſtinct *. At four months, the fœtus meaſures above 5 inches; at five months, between 6 and 7 inches; at ſix months, the fœtus is perfect in all its external parts, and commonly in length about 8, or between 8 and 9 inches; at ſeven months, it is between 11 and 12 inches; at eight months, about 14 or 15 inches; and at full time, from 18 to 22 or 23 inches. But theſe calculations, for the above reaſons, muſt be very uncertain.

SECTION IV.

Contents of the Gravid Uterus in advanced Geſtation.

THESE conſiſt of the Fœtus, Umbilical Cord, Placenta, Membranes, and Contained Fluid. We have already traced the

* *Vide* Dr Hunter's elegant Plates of the Gravid Uterus, the Works of Dr Harvey, De Graaf, Malpighi, Haller, &c.

the progreſs of the fœtus; and ſhall proceed to deſcribe the other parts of the ovum in advanced geſtation, as juſt now enumerated.

UMBILICAL CORD.

THE fœtus is connected to the placenta by the umbilical cord, or navel-ſtring; which may be defined, "a long vaſcular rope, compoſed of two arteries and a vein, covered with coats derived from the membranes, and diſtended with a quantity of viſcid gelatinous ſubſtance to which the bulk of the cord is chiefly owing."

The cord always ariſes from the centre of the child's belly, but its point of inſertion in the cake is variable. Its ſhape is ſeldom quite cylindrical; and its veſſels are ſometimes twiſted or coiled, ſometimes formed into longitudinal ſulci. Its diameter is commonly about the thickneſs of an ordinary finger, and its length ſufficient to admit the birth of the child with ſafety, though the placenta ſhould adhere at the fundus uteri. In length and thickneſs, however, it is liable to conſiderable

variation. The extremity next the fœtus is generally ſtrongeſt; and is ſomewhat weaker and more ſlender next the placenta, according to its place of inſertion; which, though commonly not far from the centre, is ſometimes towards the very edge. This ſuggeſts an important advice to practitioners, to be cautious of pulling the rope to extract the placenta when they feel the ſenſation of its ſplitting as it were into two diviſions, which will proportionally weaken its reſiſtance, and render it liable to be ruptured with a very ſlight degree of force in pulling.—The uſe of the cord is to connect the fœtus to the cake, to convey the nutritious fluid from the mother to the child, and to return what is not employed.

Placenta.

The Placenta, Cake, or After-birth, is a thick, ſoft, vaſcular maſs, connected to the fœtus by the funis umbilicalis, and to the uterus by means of the ſpongy chorion, as already explained. It differs in ſhape and

and ſize; it is thickeſt at the centre, and gradually becomes thinner towards the edges, where the membranes go off all round, making a complete bag or involucrum to ſurround the waters, funis, and child.

Its ſubſtance is chiefly vaſcular, and probably in ſome degree glandular. The ramifications of the veſſels are very minute, which are unravelled by maceration, and, when injected, exhibit a moſt beautiful appearance reſembling the buſhy tops of a tree. It has an external convex, and an internal concave, ſurface. The former is divided into a number of ſmall lobes and fiſſures, by means of which its adheſion to the uterus is more firmly ſecured. This lobulated appearance is moſt remarkable when the cake has been raſhly ſeparated from the uterus; for the membrana decidua, or connecting membrane between it and the uterus, being then torn, the moſt violent and alarming hæmorrhagies frequently enſue.

The internal concave ſurface of the placenta

centa is looſely covered with the amnion, and by the chorion more immediately and intimately. From this internal ſurface ariſe innumerable ramifications of veins and arteries, which inoſculate and anaſtomoſe with one another; and at laſt the different branches unite, and form the *funis umbilicalis*.

The after-birth adheres to every part of the internal ſurface of the uterus, as at the poſterior and anterior ſuperior parts, laterally; and ſometimes, though more rarely, part of the cake extends over the *orificium uteri*; from whence, when the orifice begins to dilate, the moſt frightful and dangerous floodings ariſe. But the moſt common place of attachment of the cake is from the ſuperior part of the cervix to the fundis.

Twins, triplets, &c. have their placenta ſometimes ſeparate and ſometimes adhering together. When the placentæ adhere, they have generally the chorion in common; but each fœtus has its diſtinct amnion. They are commonly joined together, either by an intervening membrane, or

or by the ſurfaces being contiguous to one another; and ſometimes the veſſels of the one cake anaſtomoſe with thoſe of the other.

The human placenta, according to Dr Hunter, is ſimilar in ſtructure to that of quadrupeds; and ſeems to be compoſed of two diſtinct ſyſtems of parts, a ſpongy or cellular, and a vaſcular ſubſtance. It has of conſequence two diſtinct ſets of veſſels. The ſpongy or cellular part, formed by the decidua, is derived from the mother; and, if filled with injection, will increaſe the placenta to nearly twice its ordinary thickneſs; the more internal vaſcular part belongs entirely to the fœtus, and can only be injected from the cord, as the ſpongy part by filling the veſſels of the uterus. This will be better underſtood when the mode of circulation between the parent and child is explained.

Membranes.

These conſiſt, externally, of two layers of the ſpongy chorion, called *decidua*, and *decidua reflexa*; internally, of the true chorion and

and the amnion. They form a pretty ſtrong bag, commencing at the edge of the cake, going round the whole circumference, and lining the internal ſurface of the womb. When ſeparated from the uterus, this membranous bag is ſlender and yielding, and its texture readily deſtroyed by the impulſe of the contained fluid, the preſſure of the child, or of the finger in touching; but in its natural ſtate, while it lines the womb, and is in cloſe contact with its ſurface, the membranous bag is ſo tough and ſtrong as to give a conſiderable degree of reſiſtance. It is alſo ſtrengthened in proportion to the different layers of which it is compoſed, whoſe ſtructure we ſhall proceed to explain more particularly.

1. The *Membrana Decidua*, or that lamella of the ſpongy falſe chorion which is in immediate contact with the uterus, is originally very thick and ſpongy, and exceedingly vaſcular, particularly where it approaches the placenta. At firſt it is looſely, as it were, ſpread over the ovum; and

the intervening ſpace is filled with a quantity of gelatinous ſubſtance. It gradually becomes more and more attenuated by ſtretching, and approaches nearer to the interior lamella of the decidua, called *decidua reflexa;* and about the fifth month the two layers come in contact, and adhere ſo as to become apparently one membrane *.

2. *Decidua Reflexa.* In its ſtructure and appearance it is ſimilar to the former, being rough, fleecy, and vaſcular, on its external ſurface; internally, ſmoother, and perforated with a number of ſmall foramina, which are the orifices of veſſels that open into this internal ſurface. In advanced geſtation, it adheres intimately to the former membrane, and is with difficulty ſeparated when the double decidua comes off entire; but the outer lamella more commonly adheres to the uterus after the placenta and other membranes are expelled, and is afterwards caſt off with the cleanſings.

The decidua reflexa becomes thicker and

 more

* *Vid.* Dr Hunter's Tables, Pl. xxvii. fig. 2. Pl. xxix. fig. 1. 2. 4. 5. Pl. xxxi. fig. 1. 2. &c.

more vaſcular as it approaches the placenta, and is then blended with its ſubſtance, conſtituting the cellular or *maternal* part of the cake, as it is termed by Dr Hunter. The other or more internal part belongs to the fœtus, and is ſtyled the *fœtal* part of the placenta.

The *double decidua* is opake in compariſon of the other membranes; the blood-veſſels are derived from the uterus, and can be readily traced into it. Dr Hunter ſuppoſes that the double decidua lines the uterus nearly in the ſame manner as the peritonæum does the cavity of the abdomen, and that the ovum is incloſed within its duplicature as within a double night-cape. On this ſuppoſition the ovum muſt be placed on the outſide of this membrane, which is not very readily to be comprehended; unleſs we adopt Signor Scarpa's opinion already mentioned, and ſuppoſe it to be originally entirely compoſed of "an inſpiſſated coagulable lymph."

3. The *true Chorion*, or that connected with the amnion, is the firmeſt, ſmootheſt,

and moſt tranſparent of all the membranes, except the amnios; and, when ſeparated from it, has a conſiderable degree of tranſparency. It adheres pretty cloſely to the internal ſurface of the cake, which it covers immediately under the amnios, and gives alſo a coat to the umbilical cord. It is connected to the amnion by means of a gelatinous ſubſtance, and is eaſily ſeparated from it.

4. The *Amnion*, or internal membrane, forms the external coat of the umbilical cord. This internal lamella of the membranous bag is by much the moſt thin, attenuated, and tranſparent of the whole; and its veſſels are ſo delicate, that they can hardly be diſcovered; their diameters are ſo ſmall, as to be incapable in their natural ſtate of admitting globules of red blood. It is, however, firmer and ſtronger than the chorion, and gives the greateſt reſiſtance in the breaking of the membranes.

The ſmall bag, called *veſicula umbilicalis*, formerly deſcribed, and only conſpicuous in the early months from its ſituation, is

placed between the amnion and chorion, near the attachment of the cord; and, from the colour of its contents, has been miſtaken for the urachus: but there is no allantois in the human ſubject.

The *allantois* in quadrupeds is an oblong membranous ſac, or pouch, placed between the chorion and amnion. This membrane communicates with the urachus, which in brutes is open, and tranſmits the urine from the bladder to the allantois.

5. The *Waters* are contained within the amnion, and are called the *liquor amnii.* They are pureſt, cleareſt, and moſt limpid in the firſt months; acquiring a colour and becoming ſomewhat ropy, towards the latter end. They vary in different ſubjects, both in regard to conſiſtence and quantity; and, after a certain period, they proportionally diminiſh as the woman advances in her pregnancy. This liquor does not, in any reſpect, reſemble the white of an egg; it is generally ſaltiſh, and therefore unfit for the nutrition of the child; ſome of it may perhaps be abſorbed by the fœtus,

but

but the child is chiefly nourished by the navel-string. In the early months, the organs are not fit for swallowing; and monsters are sometimes born alive, where such organs are altogether wanting.

Water is sometimes collected between the chorion and amnion, or between the lamellæ of the chorion. This is called the *false water*: It is generally in much smaller quantity than the true water; and, without detriment to the woman, may flow at any time of pregnancy.

Having described the contents of the gravid uterus, let us consider the changes which that organ suffers during the progress of gestation, and explain the manner of circulation between the parent and fœtus, and within the body of the fœtus: we shall then enumerate the most remarkable peculiarities of the *non-natus*; and conclude the subject with a few observations on Superfœtation, extra-uterine Conception, and the Generation of Monsters.

SECTION V.

Changes of the Uterine Syſtem from Impregnation.

THOUGH the uterus gradually encreaſes in ſize from the moment of conception till full time, and although its diſtention is proportioned to that of the ovum, with regard to its contents, it is, ſtrickly ſpeaking, never completely diſtended: for, in early geſtation, they are entirely confined to the fundus; and, at full time, the finger can be paſſed for ſome way within the orificium uteri without touching any part of the membranes*. Again, though the capacity of the uterus increaſes, yet it is not mechanically ſtretched, for the thickneſs of its ſides does not diminiſh. The increaſed ſize ſeems, therefore, to depend on a proportional quantity of fluids ſent to that part, nearly in the ſame way the ſkin of a child, though it ſuffers ſo great diſtention, does not become thinner, but preſerves its uſual thickneſs.

This is proved from ſeveral inſtances of

* See Dr Hunter's Tables, Pl. xxxi. fig. 1.

of extra-uterine fœtuſes, where the uterus, though there were no contents, was nearly of the ſame ſize, from the additional quantity of fluids tranſmitted, as if the ovum had been contained within its cavity. Boehmerus* relates the ſame circumſtance, without attempting to explain it, in the hiſtory of a caſe of extra-uterine conception in the fifth month. The uterus is painted of a conſiderable ſize, though the fœtus was contained in the ovarium.

The gravid uterus is of different ſize in different women; and will vary according to the bulk of the fœtus and involucra. The ſituation alſo varies according to the increaſe of its contents, and the poſition of the body. For the firſt two or three months, the cavity of the fundus is triangular as before impregnation; but as the uterus ſtretches, it gradually acquires a more rounded form. In general, the uterus never riſes directly upwards, but inclines a little obliquely; moſt commonly

* *Vide* Boehmeri Obſ. Anatom. Rarior. Faſciculus notabil. circa uterum human. Obſervatio de Conceptione ovaria, tabula prima.

to the right ſide*: its poſition is never, however, ſo oblique as to prove the ſole cauſe either of preventing or retarding delivery.

Though conſiderable changes are occaſioned by the gradual diſtention of the uterus, it is difficult to judge of pregnancy from appearances in the early months. For the firſt three months, the os tincæ feels ſmooth and even, and its orifice is nearly as ſmall as in the virgin ſtate. When any difference can be perceived, it will conſiſt in the increaſed length of the projecting tubercle of the uterus, and the ſhortening of the vagina from the deſcent of the fundus uteri thro' the pelvis. This change in the poſition of the uterus, by which the projecting tubercle appears to be lengthened, and the vagina proportionally ſhortened, chiefly happens from the third to the fifth month. From this period the cervix begins to ſtretch and be diſtended, firſt at the upper part; and then the os tincæ begins alſo to ſuffer conſiderable changes in its figure and

* See Dr Hunter's Tables, Pl. i. iii. and iv.

and appearance. The tubercle shortens, and the orifice expands: but, during the whole term of gestation, the mouth of the uterus is strongly cemented with a ropy mucus, which lines it and the cervix, and begins to be discharged on the approach of labour. In the last weeks, when the cervix uteri is completely distended, the uterine orifice begins to form an eliptical tube, instead of a fissure; and sometimes, especially when the parietes of the abdomen are relaxed by repeated pregnancy, disappears entirely, and is without the reach of the finger in touching. Hence the os uteri is not placed in the direction of the axis of the womb, as has generally been supposed.

The progressive increase of the abdominal tumor, from the stretching of the fundus, affords a more decisive mark of the existence and period of pregnancy than any others; and the progress is nearly as follows.

About the fourth, or between the fourth and fifth month, the fundus uteri begins

to riſe above the pubes or brim of the pelvis, and the cervix to be ſomewhat diſtended. In the fifth month, the belly ſwells like a ball with the ſkin tenſe, the fundus extends about half way between pubes and navel, and the neck is ſenſibly ſhortened. In the ſeventh month, the fundus, or ſuperior part of the uterine tumor, advances as far as the umbilicus; and the cervix is then nearly three-fourths diſtended. In the eighth, it reaches mid-way between the navel and ſcrobiculus cordis; and, in the ninth, to the ſcrobiculus itſelf, the neck then being entirely diſtended; which, with the os tincæ, become the weakeſt parts of the uterus. Thus at full time the uterus occupies all the umbilical and hypogaſtric regions: its ſhape is almoſt pyriform, that is, more rounded above than below, and having a ſtricture on that part which is ſurrounded by the brim of the pelvis *.

During the progreſs of diſtention, the ſubſtance of the uterus becomes much looſer,

* *Vide* Dr Hunter's Tables, Pl. xvi.

loofer, of a fofter texture, and more vafcular than before conception; and the diameter of its veins is fo much enlarged that they have acquired the name of *finufes*. They obferve a more direct courfe than the arteries, which run in a ferpentine manner through its whole fubftance, and anaftomofe with one another, particularly at that part where the placenta is attached: It is in this part alfo that the vafcular ftructure is moft confpicuous.

The arteries pafs from the uterus thro' the decidua, and open into the fubftance of the placenta in an oblique direction. The veins alfo open into the placenta; and by injecting thefe veins from the uterus with wax, the whole fpongy or maternal part of the placenta will be filled *.

The mufcular ftructure of the gravid uterus is extremely difficult to be traced with any exactnefs. In the wombs of women who die in labour, or foon after delivery, fibres running in various directions are obfervable more or lefs circular.

These

* *Vide* Dr Hunter's Tables, Pl. x. fig. 1. and 2.; Pl. xv. fig. 1, &c.

These ſeem to ariſe from three diſtinct origins, *viz.* from the place where the placenta adheres, and from the aperture or orifice of each of the tubes; but it is almoſt impoſſible to demonſtrate regular plans of fibres continued any length without interruption.

The appendages of the uterus ſuffer alſo conſiderable changes; for the tubes, ovaries, and ligaments, gradually go off below the fundus as it ſtretches, and at full time are almoſt entirely obliterated. At full time, eſpecially in a firſt pregnancy, when the womb riſes higher than in ſubſequent impregnations, the ligamenta rotunda are conſiderably ſtretched; and to this cauſe thoſe pains are probably owing which ſtrike from the belly downwards in the direction of theſe vaſcular ropes, which are often very painful and diſtreſſing towards the latter end of geſtation. Again, as the uterus, which is chiefly enlarged towards the fundus, at full time ſtretches into the cavity of the abdomen without any ſupport, leaving the broad ligaments below

below the moſt bulky part, we can readily ſee, that by pulling at the umbilical cord to deliver the placenta, before the uterus is ſufficiently contracted, the fundus may be pulled down through the mouth of the womb, even though no great violence be employed. This is ſtyled the *inverſion of the uterus* ; and is a very dreadful, and generally fatal, accident. It is the conſequence only of ignorance or temerity; and can ſcarcely happen but from violence, or from an officious intruſion on the work of nature, by pulling at the rope while the woman is faint or languid, and the uterus in a ſtate of atony.

In ſome rare inſtances, the force of labour which propels the child where the cord is ſhort naturally, or rendered ſo by circumvolutions round the body of the child, may, when the placenta adheres to the fundus uteri, bring it down ſo near the os tincæ, that little force would afterwards be ſufficient to complete the inverſion. This ſuggeſts a precaution, that in the above circumſtances, if ſtrong labour-

pains ſhould continue, or a conſtant bearing down enſue, after the delivery of the child, the practice of pulling by the cord ſhould be carefully avoided, and the hand of the operator be prudently conducted within the uterus, to ſeparate the adheſion of the cake, and guard againſt the hazard of inverſion *.

The ovaria alſo ſuffer ſome change from pregnancy.

A roundiſh figure of a yellow colour appears in one of them, called by anatomiſts the *corpus luteum*; and in caſes of twins, a corpus luteum often appears in each ovarium. It was imagined to be the calyx ovi; and is obſerved to be a gland from whence the female fluid or germ is ejected. In early geſtation this cicatrix is

* Of ſeven unhappy caſes of inverted uterus where I have been called within ſeveral years, the conſequence of ignorance or temerity of the practitioner, in one ſingle inſtance only the woman ſurvived the ſhocking accident. The other women had generally expired before any attempt could be made to relieve them.

is moſt conſpicuous, when a cavity is obvious, which afterwards collapſes.

If the ovarium be injected in the latter months, the corpus luteum will appear to be compoſed chiefly of veſſels. A portion of it, however, in the centre, will not be filled; from which it is, with ſome reaſon, ſuſpected that it is a cavity, or that it contains a ſubſtance not yet organiſed *.

SECTION VI.

Manner of Circulation between the Mother and Fœtus.

AFTER many diſputes on this ſubject, it is now generally allowed, that the communication between the parent and child is carried on entirely by means of the placenta, whoſe ſpongy ſurface adheres to the internal ſurface of the womb, and receives the finer part of the arterial blood of the mother by abſorption. No anaſtomoſes of blood-veſſels between them have

* *Vide* Dr Hunter's Tables, Pl. v.; Pl. xv. fig. 5.; Pl. xxix. fig. 3.; and Pl. xxxi. fig. 3.

have yet been clearly ſhown by the experiments of any phyſiologiſt; nor has any coloured injection been puſhed from the uterus into the interior vaſcular part of the cake, nor from the fœtus or umbilical veſſels into the cellular part, except by the force of extravaſation. This cellular part of the placenta is probably derived from the decidua; and is not a ſpongy inorganic ſubſtance, merely intended for the attachment of the cake; but probably a regularly conſtructed and organiſed part belonging to the mother. The cells, therefore, cannot be filled by injection from the umbilical veſſels, though an injection will readily paſs from the veſſels of the uterus.

We find the ſame ſtructure obtain in cows, where the cellular can be eaſily ſeparated from the vaſcular part, and the diſtinct property of each aſcertained.

As the ſtructure of the cellular part of the placenta is ſomewhat ſimilar to that of the more ſimple glands, it may be reaſonably inferred, that it is intended for other

other purpoſes beſides merely abſorbing blood, and conveying it to the umbilical veſſels of the child. It ſeems probable, therefore, that an operation ſimilar to ſecretion is carried on in the placenta; that the veins and arteries of the fœtus, in the vaſcular part of the cake, are continuous; and that abſorbents ariſe in the follicles, which ſoon terminate in veins. From this view it appears, that the placenta is not only the connecting medium between the mother and child, intended for conveying and returning the nutritious fluid from the one to the other, but alſo changes and prepares it, in a particular manner, for circulating through the minute veſſels of the delicate fœtus.

This mode of circulation is admirably well contrived for the preſervation of the child from diſeaſes which would otherwiſe be communicated from the mother. If the mutual communication were kept up by continuous veſſels, the fœtus would conſtantly be in danger of ſuffering when

the mother's circulation was accelerated or otherwiſe diſturbed.

SECTION VII.

Circulation in the Fœtus.

THE finer part of the arterial blood of the mother, tranſmitted, in the manner juſt now mentioned, from the uterus to the placenta, and conveyed along the umbilical cord to the fœtus for its ſupport and increaſe, circulates in the ſyſtem of the non-natus in the following manner.

The blood paſſes directly from the placenta into the umbilical vein; which, running along the funis, perforates the belly of the fœtus, and enters under the liver, where it divides into two brances, nearly at half a right angle. One of theſe branches, called the *ductus venoſus*, carries part of this liquor immediately to the lower vena cava. The other carries the reſt to the vena portarum; where, after circulating through the liver, it alſo gets into the

vena cava, and ſo to the heart: but the circulation here is carried on without any neceſſity for the lungs being dilated. For fœtuſes have an oval hole open between the two auricles of the heart, and a large communicating canal, called *canalis arterioſus*, going between the pulmonary artery and aorta; which two paſſages allow the reſt of this circulating fluid, that returns by the cava ſuperior, to be tranſmittted to the aorta, without paſſing thro' the lungs.

The blood is returned from the fœtus by the *arteriæ umbilicales*, which take their riſe ſometimes from the trunk of the aorta, and ſometimes from the iliac arteries of the fœtus; and, running by the external ſides of the bladder, aſcend to go out at the navel.

Thus there are three circulations belonging to the fœtus, *viz.* one between the uterus and placenta, by abſorption; one between the placenta and fœtus, by a continuation of veſſels through the cord; and one within the fœtus itſelf.

SECTION VIII.

Poſition of the Fœtus in utero.

THE fœtus is commodiouſly adapted to the cavity of the uterus, and deſcribes an oblong or oval figure; its ſeveral parts being collected together in ſuch a manner as to occupy the leaſt poſſible ſpace. The ſpine is rounded, the head reclines forward towards the knees, which are drawn up to the belly, while the heels are drawn backwards towards the breech, and the hands and arms are folded round the knees and legs. The head of the child is generally downwards. This does not proceed, as was commonly alleged, from the funis not being exactly in the middle of the child's body, for it is not ſuſpended by the funis: the reaſon is, becauſe the ſuperior parts are much larger and heavier in proportion than the inferior. When other parts preſent, it ſeems owing to the motion of the child altering its figure when the waters are much diminiſhed in quantity,

quantity, or to circumvolutions of the cord: when the position is once altered, it becomes confined or locked in the uterus, and cannot easily resume its original posture.

As the figure of the fœtus is oval, and the head naturally falls to the most depending part of the uterus, the vertex generally points to the os tincæ, with the ears diagonally in the pelvis between the pubes and sacrum. The fœtus is mechanically disposed to assume this position from its peculiar figure and construction, particularly by the bulk of the head and articulation with the neck, by the action of its muscles, and by the shape and construction of the cavity in which it is contained.

SECTION IX.

Peculiarities of the Fœtus.

THE fœtus, both in external figure and internal structure, differs materially, in many striking circumstances, from the adult.

adult. It is ſufficient for our preſent purpoſe to mention a few particulars.

The head is very large in proportion to the reſt of the body; the cranial bones are ſoft and yielding, and the ſutures not yet united; ſo that the bulk of the head may be diminiſhed in every direction, and its paſſage conſequently be rendered more commodious. The bones of the trunk and extremities, and all the articulations, are alſo remarkably flexible. All the apophyſes are epiphyſes; even the heads and condyles and brims of cavities, inſtead of bone, are of a ſoft cartilaginous conſiſtence.

The brain, ſpinal marrow, and whole glandular as well as nervous and ſanguiferous ſyſtems, are conſiderably larger in proportion in the fœtus than in the adult. It has a gland ſituated in the fore-part of the cheſt between the laminæ of the mediaſtinum, called the *thymus*. The liver and kidneys are much larger in proportion; and the latter are divided into a number of ſmall lobes, as in the brute.

The

The fœtus alſo differs in ſeveral circumſtances from a child who has breathed.

The cavity of the thorax is leſs in proportion than after reſpiration. The lungs are ſmaller, more compact, of a red colour like the liver, and will ſink in water; but putrefaction, 'and a particular emphyſema, as in diſeaſes of cattle, and blowing into them, will make them ſwim: which ſhould prevent us from haſtily determining, from this circumſtance, whether a child has breathed or not; which we are often called on to do. Neither does their ſinking prove that the child never breathed; for a child may die, or be ſtrangled in the birth, or immediately after, before the lungs are fully inflated.

The arterial and venous ſyſtems are alſo different from that of the child. Hence the difference in the manner of circulation already taken notice of.

SECTION X.

Some Subjects connected with Gestation.

I. SUPER-FOETATION.

SOON after impregnation takes place, the cervix and orificium uteri become entirely closed up by means of a thick viscid gluten: the internal cavity is also lined by the external membrane of the ovum, which attaches itself to the whole internal surface of the fundus uteri: the Fallopian tubes also become flaccid; and are, as gestation advances, supposed to be removed at so great a distance, that they cannot reach the ovaria to receive or convey another ovum into the uterus. For these and other reasons, the doctrine of super-fœtation, or the possibility of one conception soon after supervening another in the same woman, is now pretty generally exploded:—A doctrine that seems to have arisen from the case of a double or triple conception; where, some time after their formation and progressive evolution

in utero, one fœtus has been expelled, and another has remained; or, after the extinction of life at an early period, one or more may ſtill be retained, and thrown off in a ſmall and putrid ſtate, after the birth of a full-grown child.

The uterus of brutes is divided into different cells; and their ova do not attach themſelves to the uterus ſo early as in the human ſubject, but are ſuppoſed to receive their nouriſhment for ſome time by abſorption. Hence the os uteri does not cloſe immediately after conception; for a bitch will admit a variety of dogs while ſhe is in ſeaſon, and will bring forth puppies of theſe different ſpecies.—Thus it is common for a gre-hound to have, in the ſame litter, one of the gre-hound kind; a pointer; and a third, or more, different from both: Another circumſtance that has given riſe to ſuper-fœtation in the human ſubject, which can only happen when there is a double ſet of parts; inſtances of which are very rare.

II. Ex-

II. EXTRA-UTERINE FOETUSES, or VENTRAL CONCEPTION.

THE impregnated ovum, or rudiments of the fœtus, is not always received from the ovarium by the tuba Fallopiana, to be thence conveyed into the cavity of the uterus. For there are inſtances where the fœtus ſometimes remains in the ovarium, and ſometimes even in the tube; or where it drops out of the ovarium, miſſes the tube, falls into the cavity of the abdomen, takes root in the neighbouring parts, and is thereby nouriſhed: But they are always leſs than the uterine fœtuſes; they either do not receive ſo much nouriſhment as in the ſucculent uterus, or they generally come to their full growth long before their common term.

Some of theſe burſt in the abdomen; others form abſceſſes, and are thereby diſcharged; others ſhrivel, appear bony, and are retained during life, or diſcharged by ſtool, abſceſſes, &c*.

III. MON-

* Vid. Memoires de l' Acad. de Sciences; Philoſophical Tranſactions; Manget. Biblioth. Anat.; Med. Eſſays; and Smellie's Caſes.

III. Monsters.

Every considerable deviation in the structure of a fœtus from the common order of nature is considered as monstrous, whether such deviation be consistent with life or not; and the production is commonly termed a *monster.* This idea of a monster will, however, comprehend all the variety that has been observed; and these we shall endeavour to reduce under four general heads.

1. Those productions which have supernumerary parts. These include all the variety, from the famous instance of the Bohemian sisters who were joined together by the glutæi muscles and the intestinal canal, to those fœtuses which have only an additional finger or toe.

2. Those whose parts are defective; which has happened with respect to every part of the animal body.

3. Those who have any remarkable distribution of any of the vessels, nerves, or excre-

excretory organs, whether externally visible or not.

4. The productions of animals of different species, exemplified in the mule produced by the mixed generation of an ass and a mare.

IT is very difficult to give an explanation of these deviations, nor indeed is it to be expected, while the process of generation is itself so great a mystery. If we allow with BONNET, &c. that a germ or embryo of the future production exists in the female previous to the impregnation, many of these deviations must to it be referred. Though this, however, removes the difficulty, it by no means solves it. Supernumerary parts may be more readily accounted for: for if two ova become contiguous in their gelatinous state, they may easily unite; and this contiguity and union will prevent the evolution of many of the parts, and the production will appear as one. This we can say with some certainty has been often the case, as in the Bohemian sisters

ſiſters mentioned under the firſt ſpecies; and the union in the different monſters has at various times been ſeen gradually more and more complete, ſo that moſt ſupernumerary parts evidently proceed from this cauſe.

The cauſes of the other deviations are more obſcure, and we can find no view which we can purſue with ſufficient probability to be here mentioned.

PART

PART II.

PATHOLOGY.

HAVING concifely defcribed the feveral parts, and pointed out their ufes, we fhould next proceed to the Operation; but we muft firft confider thofe complaints which may prevent conception, and may be ftyled the Pathology of *Generation*; fecondly, thofe which impede or retard delivery, or the Pathology of *Parturition*.

CHAP. I.

PATHOLOGY *of* GENERATION.

THE difeafes included under this divifion are, Topical affections of the parts, Irregularities of the periodical Eva-

Evacuation, and diseases which are sometimes mistaken for Gestation.

SECTION I.

Topical Diseases of the Genital Organs.

THE *mons veneris* and *labia pudendorum* are liable both to *ædematous* and inflammatory swellings, and to tumors, chiefly of the *steatomatous* kind. The latter sometimes, from a small beginning, gradually enlarge to an enormous size; but as they commonly adhere by a small peduncle, their excision is a simple operation, and seldom followed with considerable hæmorrhage; they leave but slight marks behind them, and for the most part easily heal.

Oedematous swellings are of two kinds; general, or local. The first are the attendants of an universal leucophlegmasia, the consequence of a dropsical habit; and the treatment must then be conducted on general principles, with a view to correct the fault in the habit. The latter arise from venous

venous plethora, and the preſſure of the bulky uterus interrupting the returning blood from the lower extremities; hence the ſerous part is extravaſated, and forms a local œdema. The ſwelling at firſt appears on the feet and legs, and gradually extends to the thighs and labia. Though ſometimes formidable, it is entirely ſymptomatic of pregnancy; and, for the moſt part, entirely ſubſides ſoon after delivery.

The *labia*, when inflamed or abraded, from whatever cauſe, (as from the involuntary diſcharge of acrid urine, or any other acrimonious diſcharge which excoriates the parts), may grow together if not prevented by frequent bathing; ſhould this happen, they muſt be ſeparated with a ſcalpel, and the like accident by proper care in future prevented.

The *clitoris* ſometimes becomes enlarged greatly beyond the ordinary ſize. When incommodiouſly elongated, amputation may be performed with ſafety. The enlargement of the *nymphæ* alſo requires the ſame treatment.

Extirpation of the *carunculæ myrtiformes* sometimes also becomes requisite; but *fungous excrescences* of these parts may generally be removed by caustic, or any more gentle escharotic application.

The *urethra*, too, is subject to disorders and accidents; such as fungous excrescences, contusion, laceration, inflammation, gangrene, and the stone.

The first of these may, when large, be cut out with the scissars, or destroyed by the application of the bougie. All the others, as now enumerated, may be the consequence of a stone sticking in the passage: when the expulsion cannot be forwarded by the semicupium, the stone must be extracted, either by dilating the urethra itself, or cutting upon it through the vagina. The symptoms of a stone in the female bladder, towards its neck, or in the urethra, are nearly similar to those which occur in the male; and the treatment and operation are too well known to require a description.

The *imperforated hymen* in some sub-

jects ſhuts up the os externum entirely, and is expanded even to the meatus urinarious. It is ſeldom attended with inconvenience till the age of puberty, when the menſes ſhould appear; at which time a ſwelling or tumor is formed, by the confinement of the accumulating menſtrual blood. The quantity increaſes at every ſucceeding period; and, by the diſtention of the parts, excites the moſt troubleſome and painful complaints. The cure conſiſts in dividing the membrane by inciſion. The opening ſhould be infinitely large, that the whole contents may be freely evacuated: In ſome caſes the thickneſs is ſo great, as to require the uſe of a trocar *. The re-union of the lips of the wouud muſt, by proper dreſſings, be carefully guarded againſt

Narrowness of the Vagina ſometimes occurs. This may be either natural, from original conformation; or accidental, in conſequence of diſeaſe. Cicatrices may be formed from a laceration after ſevere labour;

* *Vid* Edinburgh Med. Commentaries, Vol. II. part 2. Sect. ii. Caſe iv.

labour; in consequence of ulceration, erosion, &c. Preternatural constrictions may likewise be induced, from the use of styptic applications, or fumigations. The cure may be attempted by emollient fomentations; as by the steams of warm water directed to the parts; and by introducing a small tent of compressed sponge, which hath been previously moistened and kept tight bound with tape till dry. This, by imbibing the moisture, will swell and expand; and thus the aperture will be gradually stretched. The tent must be withdrawn every day, by means of a thread fixed through its middle, and a larger one introduced in its stead. The sponge should be smooth, and lubricated with pomatum. This process must be continued, till the passage becomes sufficiently enlarged.

If these methods fail, recourse must then be had to the knife: though, in the simple contraction of the cavity of the vagina, this expedient is seldom necessary, and the attempt is often attended

with the utmoſt danger; therefore ſhould never be determined on till every other method has failed. The dilatation, which previous to impregnation ſeemed impracticable, has very often been accompliſhed by labour-pains.

Sometimes there is a natural defect in the genital parts, from an original malconformation; ſo that the vagina is either imperforated altogether, or a foramen only remains ſufficient to tranſmit the menſtrual blood. If, from coalition of the parietes of the vagina, the paſſage be entirely ſhut up, an attempt to force it would be vain. The orifice in the latter caſe will afford a proper direction for the knife; but the operator muſt be cautious not to miſtake the urethra for the paſſage into the vagina.

When the vagina is impervious altogether, the uterus has been ſometimes found wanting *.

The *perinæum*, from the diſtention it ſuffers

* Vid. Morgagni, de cauſis et ſedibus morborum, Epiſtol. XLVI.

suffers in time of labour, or from mechanical violence in delivery, is subject to inflammation, tumefaction, laceration, and their consequences; and these, in some cases, are not confined to the perinæum only, but even extend to the vagina, rectum, and bladder. If these complaints resist the common means of relief, such as frequent bathing, fomentations, cataplasms, &c. and terminate in gangrene, leaving behind them fistulous sores with callous lips, unless a cure be effected by time, they generally continue in a fistulous state, without a possibility of remedy.

The *uterus*, like other parts, may also be affected with various disorders: These are chiefly inflammation and its consequences; sarcomatous, fungous, and polypous tumors; stoney concretions, dropsy, tympanites, scirrhous and cancerous tumors.

When the *os tincæ* is shut up, either originally, or by cicatrix in consequence of suppuration, laceration, ulceration, or the like, the case is generally incurable; except the menstrual blood by its weight

force a paſſage, or point out the manner of procuring it: if that fails, a future ſterility is the unavoidable conſequence.

Original conformations of this kind ſeldom admit of any treatment, for this reaſon: Becauſe, beſides the imperviouſneſs of the os tincæ, the uterus itſelf ſometimes appears a ſolid body without any cavity in the centre.

SARCOMATOUS, FUNGOUS, or POLYPOUS TUMORS, ariſe from all parts of the vagina and uterus. They happen to women at every period of life, but moſt frequently towards the decline. They generally proceed from an obſtruction of the ſmall glands of the parts, and are leſs or more difficult to diſcover or remove, as their origin is low or high in the vagina or uterus. Their texture or conſiſtence is very different; ſometimes they are tender and mucilaginous, like thoſe in the noſe; at other times firm and ſolid, like a wen. Their exiſtence is diſcovered by a careful inquiry into the circumſtances of the caſe, and by an examination of the parts; ſome-

times

times their basis is very considerable; though they generally adhere by a small neck. They sometimes, like scirrhi, continue indolent for many years; and are also liable to degenerate into scirrhus and cancer. In their mildest state, they are attended with perpetual stillicidium from the vagina, and sometimes with profuse and dangerous floodings. They must be carefully distinguished from *herniæ*, *prolapsus uteri*, and other tumors. Polypi, when curable by an operation, may generally be removed by ligature; a safer method than cutting with the scalpel, as they are often supplied with large blood-vessels, from which there may be danger of a fatal hæmorrhagy.

For fixing the ligature, the fingers of the operator will be sometimes sufficient. When this method fails, Dr HUNTER's needle, or M. LEVRET's double canula for applying and fixing the ligature over the tumor, are the most simple and successful expedients. M. LEVRET's instrument is nothing more than a piece of flexible gold or

ſilver wire, paſſed through a double hollow probe in the form of a nooſe: This is to be conveyed into the vagina, and carried over the tumor till it reach the baſe; the ends of the wire muſt be gently drawn, or it muſt be twiſted round as tight as the patient can eaſily bear; the canula muſt afterwards be fixed to the thigh, and the wire tightened every day as it ſlackens. By this means the circulation in the tumor is ſtopped, and in two or three days the polypus will drop off. In fixing the ligature, the operator muſt be cautious not to miſtake the tubercle of the os tincæ for the polypous tumor; a blunder which would prove of fatal conſequence to the patient.

Stoney Concretions, and even Worms, it is ſaid, have been ſometimes found within the urerus *. Calcular concretions have indeed been diſcovered almoſt in every cavity of the human body; but ſuch appearances rarely occur in the human

* *Vide* Miſcellania Curioſ. Acad. Naturæ. Mem. de l' Acad. Royal des Scienc. Vol. II. &c.

human uterus. There seems less probability of the existence of worms, except in cases of suppuration or cancer.

A Collection of Water, called Hydrops Uteri, is sometimes formed in this cavity; a disease which has been often mistaken for pregnancy, as the menses are generally obstructed. When the disease is ascertained by a fluctuation sensibly felt in the part, and if there should be no suspicion of real gestation, the water may be evacuated by introducing a finger, or the catheter, through the os uteri; if this seems impracticable, the constricted parts must be relaxed by warm baths and fomentations. After the evacuation of the water, the cure may be completed by suitable regimen, strengthening medicines, and proper exercise.

Tympanites Uteri, or *wind* pent up in this cavity, is always passed involuntarily, and frequently with considerable noise. The only cure is by the spontaneous contraction of the uterus, and by removing the discharge which may give

riſe to it; for this uncommon diſorder is often connected with a morbid diſcharge from the vagina *.

SCIRRHOUS TUMORS are ſeldom diſcovered till the diſeaſe has made conſiderable progreſs. An uneaſy weight and bearing down, ſuppreſſion of urine, fluor albus, uterine pain, and ſometimes flooding, are the uſual ſymptoms; but the touch of the enlarged indurated cervix or fundus uteri, in ſuſpicious caſes, will afford the moſt infallible criterion. Theſe tumors, like ſimilar complaints in other parts, tho' they may long remain in an indolent ſtate, ſeldom admit of relief from medicine, and generally at length degenerate into cancer. Nor is any good to be expected from Peruvian bark, ſarſaparilla, or even the ſo-much extolled cicuta. The general health muſt then, in a very particular manner, be attended to, and the moſt urgent ſymptoms muſt be palliated. For this purpoſe, a cooling regimen, the moderate uſe of gentle laxatives, occaſional bleedings,

* *Vide* Sauvage.

bleedings, and opiates, are the chief means.

A fœtid bloody discharge, along with an increase of pain, heat, and itching, mark the ulcerated or cancerous state of the disease. The progress is then rapid; and the stench becomes intolerable even to the attendants as well as to the patient. The ravages of the disease are shocking; for stools, urine, blood, and matter, are sometimes discharged from one orifice. In these unhappy circumstances, little can be attempted by way of treatment, but to amuse the patient, by palliating the painful symptoms with opiates, and keeping the sores clean by injections, till death brings the only relief.

PROCIDENTIA OR PROLAPSUS UTERI. The uterus sometimes changes its place, and falls down into the vagina, frequently protruding through the os externum. The cause may either be general debility, or topical relaxation of the connecting parts, particularly of the vagina. The cure consists

ſiſts in the reduction and retention of the prolapſed part. When peſſaries are diſagreeable, the uterus may be ſuſpended by a bit of ſponge: Gently reſtringent injections ſometimes prove uſeful; but a long-continued uſe of them will as certainly be hurtful, ſo that they ſhould always be employed with caution. The general conſtitution ſhould be ſtrengthened by a proper regimen, bark, mineral waters, and the cold bath.

The *ovaria*, in common with other glandular parts, are ſubject to diſeaſe, ſuch as ſcirrhous, ſteatomatous, and dropſical ſwellings; by which they become often ſo much enlarged, as to occupy the whole abdomen. Such caſes generally prove incurable. Tumors of the ovaria at length generally terminate in dropſy: the ſymptoms are analogous to thoſe of the aſcites; from which, however, they ſometimes differ in ſeveral particulars.

In the beginning, the enlarged ovarium may be eaſily diſtinguiſhed from the aſcites, by the ſwelling and pain being circumſcribed,

cumscribed, and confined to one side; in the progress, by the advances being more slow and gradual; in its advanced stages, by some œdematous swellings of the leg and thigh on the side affected, and by one being able to feel it from the vagina. The cure differs in nothing very material from that of the true hydrops ascites*. When the tumor points outwardly, the contents, whether water or pus, must be evacuated by a free opening; when gelatinous or purulent, a constant drain, by means of a seton, may, in some cases, be employed with advantage. The patient must afterwards be treated in the usual manner. The extirpation of the ovarium, in a diseased state, has been by some authors proposed: but when the tumor is very much enlarged, and perhaps adhesions to the neighbouring parts are already formed, the excision would at least prove a difficult, if not a very hazardous operation.

The *Fallopian tubes* are also liable to disease. Water is sometimes collected in them,

* *Vide* Dr Monro's Treatise on the Dropsy.

them, and either floats through the whole cavity of the tube, or each end coalefces in confequence of fome inflamation, and the water appears to be contained in a cyft. It is difficult to be diftinguifhed from the difeafed ovarium, with which it is often complicated, and requires a fimilar method of treatment.

Fœtufes, or *Bones* of *Fœtufes*, are fometimes found in the tubes or ovaria; but they feldom make confiderable progrefs, and ought never to be cut upon and extracted, unlefs when they point outwardly, or form abfceffes.

SECTION II.

Irregularities of the Menftrua.

THESE comprehend *Amænorrhœa*, *Mænorrhagia*, and *Leucorrhœa*; and each diftinct genius includes a confiderable variety of fpecies.

I. AMÆNORRHOEA confifts of two fpecies.

1. The retention or abſence of the menſes beyond their uſual period of appearance, called *emanſio menſium.*

2. An interruption in the periodical revolution, after the law of habit is eſtabliſhed, ſtyled *ſuppreſſions* or *obſtructions.*

1.] The *Retention of the Menſes* proceeds from different cauſes; and may be referred to general debility of the ſyſtem, which impairs the action of the heart and arteries; or to ſome fault in the uterus itſelf, as torpor or rigidity of the veſſels. The firſt produces ſymptoms of debility, which are generally ſtyled *chlorotic:* and the indications of cure are, to ſtrengthen the ſtomach and ſyſtem; which is chiefly affected by bark, chalybeates, regimen, and the cold bath. Torpor and rigidity of the uterine veſſels may be ſometimes removed by the means uſually employed for relaxing torpor and rigidity of the whole ſyſtem; or by promoting the action of the uterine veſſels, more particularly by ſtimulating the neighbouring organs. This is chiefly to be attempted in thoſe caſes where

where nature makes an effort; but, from debility or ſome other circumſtance, is unable to accompliſh it. She is then to be gently aſſiſted, not forced. Aloetic purges, tinctura melampodii, ſmall doſes of calomel, or electricity, are the uſual remedies; but they ought to be cautiouſly and prudently uſed. Tinctura fuliginis, or an extract prepared from it, and given in the doſe of ℈j twice or thrice a day, is a more ſafe, and often moſt efficacious medicine in the latter caſe, along with the fœtid gums. But the warm bath, or a change of climate, are the moſt powerful antiſpaſmodics, and may be often ſucceſsfully employed when other remedies fail.

Though we are in general able to diſtinguiſh theſe two cauſes of debility and torpor, yet it muſt be allowed, that retention of the menſes, from every cauſe, ſoon induces a debility, which, without ſome attention, may be miſtaken for the original defect.

2.] *Suppreſſion of the Menſes.* The evacuation may be deficient in periods or quantity.

tity. The firſt is more properly termed *ſuppreſſion*, or, in vulgar language, *obſtructions*; the latter, *ſparing* or *painful menſtruation*.

1. *Suppreſſion*. The menſes are rarely ſuppreſſed in conſequence of weakneſs: though it muſt be obſerved, that they are readily affected by any general diſorder in the habit; and, in that view, the deviation is to be conſidered merely as ſymptomatic; and the cure will depend on correcting the fault in the conſtitution.

Spaſm, or rigidity of the uterine veſſels, is, perhaps, a more frequent cauſe than any other, occaſioned, more remotely, by cold, irregular paſſions, plethora, &c. The cure muſt then be directed with a view to remove the conſtriction of the uterine veſſels, and adapted to particular conſtitutions and ſymptoms. Venæſection, the warm bath, and emmenagogues, ſuited to the peculiar circumſtances of the caſe, are the proper remedies. Medicines under the name of *emmenagogue* are not, however, to be relied on; and the

means employed for reſtoring the evacuation are moſt ſucceſsfully exhibited when our efforts concur with thoſe of nature. Violent uterine emmenagogues, ſo far as they may have any tendency to affect the general health, are always improper, and frequently hurtful. In a ſimple ſuppreſſion, it is often ſufficient to keep the patient quiet; to avoid cold, and irregularities of diet; with the uſe of the warm bath, ſemicupium, or ſteams of warm water directed to the uterus, when the expected period approaches.

When the ſuppreſſion is more obſtinate, aloetic purges, electricity, and the moſt powerful relaxants and antiſpaſmodics, muſt be employed.

2. Diſmænorrhœa, *ſparing*, *difficult*, or *painful menſtruation.*

Some women menſtruate with difficulty, the uterine efforts to throw out blood are painful and imperfect, the diſcharge is ſcanty; but the appearance continues for many days: during which the irritation is communicated from the uterus to the neigh-

neighbouring parts, and, by ſympathy, all over the ſyſtem; very generally producing pains about the articulation of the ſacrum, from thence to the ilia, and down the thighs; and not unfrequently attended with ſickneſs and retching, nervous ſymptoms, or a ſlight degree of hyſteria.

Theſe ſymptoms are beſt relieved, by avoiding cold and irregularities for ſeveral days preceding the accuſtomed period; by uſing actual warmth then, and more particularly during the time of menſtruation; by drinking, every night before bed-time, and in ſmaller quantities through the day, any mild, diluting, tepid drinks; by frequent reſt on a bed or ſofa; and, occaſionally, by the uſe of opiates.

II. Mænorrhagia.—The menſes are only to be conſidered as exceſſive, when the periods recur ſo often, the duration is ſo long, or the quantity evacuated ſo great, as to induce debility, with its uſual ſymptoms. In all theſe

cafes, Leucorrhœa is a frequent attendant. The caufes may be active or paffive, in common with other preternatural hæmorrhagies. Of the former are, Plethora, univerfal or local; increafed action of the veffels from fever; exceffive exercife, paffions; ftimuli applied to the uterus, or neighbouring parts; and every caufe which determines the blood more forcibly to the uterus. Of the latter, Relaxation, univerfal or local. To diftinguifh *active* from *paffive* mænorrhagia, is of the utmoft confequence in directing the treatment.

In the *firft* cafe, which is generally preceded with headach, oppreffed breathing, attended with heat, thirft, quick full pulfe, and other febrile fymptoms, we muft be exceedingly cautious of giving a fudden check to the flow, till the veffels have been fufficiently emptied, naturally from the difcharge, or by the prudent ufe of venæfection. A fpare cooling diet, cool air, open belly, and the ftricteft antiphlogiftic regimen, are then effentially necef-

fary.

ſary. Heat, violent agitations and exerciſe, and every corporeal and mental exertion, ſhould be avoided.

In *paſſive* mænorrhagia, the diſcharge muſt be moderated by ſtyptics and opiates given internally; by cold wet applications to the pubes and external parts; by confinement to a horizontal poſture on a firm bed, with hair matreſs, and few bed-clothes; by giving cold aſtringent drinks; and by avoiding every cauſe of irritation.

The vis vitæ muſt be duly ſupported by nouriſhing diet; but while the flow continues, every thing of the ſtimulating kind under the name of *cordial* muſt be very cautiouſly uſed.

When the hæmorrhagy hath entirely ceaſed, the interval muſt be improved to uſe the proper means for reſtoring the conſtitution. Of theſe, ſtrengthening diet, the moderate uſe of cordials, gentle exerciſe, the Peruvian bark, and chalybeates, are principally to be relied on. In ſome paſſive caſes, the flow is almoſt conſtant. Cordials and tonics are then particularly

 indicated:

indicated; and gentle exercife in a carriage has been often known to moderate or fupprefs the flow.

Under this article of *Mænorrhagia* may alfo be mentioned,

Irregularities towards the ceffation of the menftrua.

The menfes generally become irregular towards their final ceffation. This critical period in the female conftitution is commonly announced by irregular interruptions, unexpected returns, or immoderate difcharges; in many inftances, by exceffive, long continued, or frequent and alarming floodings. The fymptoms affume a variety of appearance, as influenced by conftitution, habit, manner of life, and the ftate of the uterine fyftem. They are rather to be confidered as the confequence of a general change in the conftitution, which terminates the age of childbearing, than merely the effects of an accidental interruption, or excefs of the periodical evacuation.

Every important change which the con-

ſtitution ſuffers, is introduced by ſlow and inſenſible degrees: the alarming ſymptoms which at this period occur, proceed from the decline of life ſtrictly ſpeaking, a diſeaſed ſtate of the uterus, or may be aſcribed to miſtaken management. In ſome women, the menſes take their leave more abruptly; in others, more ſlowly; and no material inconvenience is perceived in either caſe. Women who never had children, nor enjoyed good regular health, or whoſe conſtitution is impaired by frequent labours or miſcarriage, the nervous and delicate, are more commonly the ſubjects of complaint towards this period.

The particular ſymptoms and conſtitution, the age of the patient, her manner of life, and other circumſtances formerly mentioned, will direct the proper treatment.

If no obvious inconvenience ariſes from the abſence of the menſes, it would ſurely be abſurd to injure the conſtitution by a ſudden change of manner of living, by abſtemious diet and debilitating evacuations.

tions. On the contrary, if the ſymptoms indicate a full habit and plethoric diatheſis, venæſection, purgatives, and ſpare diet, will then be neceſſary.

Frequent or immoderate floodings, attended with ſymptoms of debility, muſt be treated as already directed. In relaxed weakly women, the conſequences are always to be leſs or more dreaded: the flux muſt be checked by cold wet applications; the painful ſymptoms relieved by opiates; and the conſtitution afterwards ſtrengthened by nutritious diet, bitters, &c.

Shooting pains about the region of the uterus, the pubes, and breaſts, along with frequent floodings, or leucorrhœa, indicate ſuſpicion of ſcirrhous or cancerous diſpoſition, and are generally preludes of diſeaſe, which ſoon ends fatally, or renders the remains of life uncomfortable.

Floodings, ſeemingly alarming and hazardous from their exceſs or frequency, are never to be dreaded, while no quantity of clots or concretions are voided, while they are unaccompanied with violent

lent pain in the hypogastric region or other symptoms of morbid predisposition. They may generally be moderated by some of the means formerly recommended in *mænorrhagia;* and if the strength be kept up, though the hæmorrhagy may occasionally recur at vague and irregular periods, even for two or three years, I have never, in the course of a long practice, known it to end fatally in a single instant: a complete recovery is generally at last accomplished, and the constitution restored, with the prospect of a state of good health for a considerable time after.

III. Leucorrhoea, *Fluor Albus,* or *Whites,* is a discharge of serous or mucous matter of a whitish colour, from the vagina. Its source is chiefly supposed to be from the vessels which pour out the menstrual blood; and the discharge is therefore considered as a mere depravity, or morbid state, of the catamenia: but it probably often proceeds from the glands at the cervix uteri, and not unfrequently from

from the lacunæ of thoſe of the vagina; for many women ſubject to leucorrhœa have the diſcharge nearly of the uſual appearance and quantity during pregnancy, and it is more ſeldom obſerved to be periodical. Its colour and conſiſtence vary according to the nature and duration of the diſeaſe, the conſtitution, ſeaſon, climate, and other circumſtances. It is probably mild and ſerous when firſt poured out; afterwards, by ſtagnating, becomes more thick and acrid, varying alſo in colour and odour.

Few women, ſomewhat advanced in life, eſpecially thoſe who have had children, who have been ſubject to miſcarriage, or irregularities of menſtrua, are entirely free from it. The inactive and ſedentary; full, jolly, or flabby women; and the relaxed and weakly; are eſpecially liable to it.

Pain and weakneſs of the back and loins, diſpepſia, and the other ſymptoms of debility and indigeſtion, ſuppoſed to be its almoſt conſtant attendants, only occur

when

when the diſcharge is exceſſive or very long continued. From quantity, or acrimony, eſpecially in warm weather, in groſs habits, or from neglect to keep the parts clean, painful excoriations are frequently occaſioned: in that ſtate it may be readily confounded with *gonorrhœa.*

The cure muſt be regulated by particular circumſtances. Groſs habits and thoſe who have been accuſtomed to full rich diet, with little excerciſe, require frequent purging, along with a mild ſpare diet and cooling regimen. In weakly relaxed conſtitutions, the indications are, To reſtore the tone and vigour of the ſyſtem, by proper regimen; bark, mineral waters, with ſteel and alum, and the cold bath.

In either caſe, the parts ſhould be kept clean by frequent cold bathing. Any gently aſtringent waſh, after general evacuations, may be freely uſed in the former caſe: and in the latter, injections of alum-water, tinctura roſarum, or balſ. traumatic. in a very dilute ſtate, or waſhing the parts with a ſponge ſoaked in the

ſtyptic

ſtyptic liquor, often ſenſibly diminiſh the diſcharge; and, in recent caſes, entirely remove it.

Gellies of hartſhorn, or ichthyocolla, balſ. capivi, and topical aſtringent injections and waſhes, are the beſt palliatives.

Leucorrhœa may be diſtinguiſhed into *local* and *general*; a morbid affection of the parts, or a weakneſs of the ſyſtem. In the former caſe, aſtringent waſhes or injections; in the latter, tonics, as bark or bitters, with lime-water, have the beſt effects. It is ſuppoſed that abſorbents act by neutralizing the ſuperabundant acid in the ſtomachs of ſuch patients, and ſo removing one debilitating cauſe.

FUROR UTERINUS. There is a ſpecies of fluor albus, deſcribed by many authors under the name of *furor uterinus*. But even exiſtence of that diſeaſe is as confidently denied: We can at leaſt with confidence aſſert, that the real nympho-mania is rarely known in this country. Nothing farther is probably meant by it, than an increaſed acrimony of the fluor albus, oc-

casioning heat, pain, itching, and of consequence irritation in these parts. The cure must therefore be conducted nearly in the same manner as in the former disease: The parts should be constantly kept clean by frequent bathing, or injections; of these a dilute solution of sacch. saturni in rose-water has been generally found to prove the most successful; a cooling regimen must also be enjoined, and occasional causes counteracted. Sometimes the centre of this irritation has been discovered within the urethra, when the bougie has proved the cure.

Sterility. From most of the preceding complaints, and from various other diseases incident to those parts, the uterus may be unfit to receive or retain the male seed; or the tubes may be too short, or may have lost their erective power: in these cases, no conception can take place. Or, either from universal debility and relaxation, or a local one of the genital system, the tone and contractile power of these parts may be destroyed, so that the semen

ſemen is thrown off immediately *poſt coitum*; which will in like manner occaſion ſterility. Theſe cauſes of barrenneſs are obvious; for where the aperture of the vagina, or of the uterus was impervious, there is not one inſtance of conception to be found in the records of medicine. The ſame effects generally follow from imperforation of the tubes, or diſeaſed ovaria.

There are, however, many other cauſes of ſterility; but theſe, while the manner of generation is a myſtery, are beyond the power of phiſiclogical inveſtigation.— Hence medical treatment can only avail in caſes ariſing from univerſal and topical debility; in correcting irregularities of the menſtrual flux, one of the moſt common cauſes of barrenneſs; and in removing tumors, cicatrices, or conſtrictions of the paſſages, by the art of ſurgery.

SECTION III.

Diſeaſes ſometimes miſtaken for Geſtation.

VARIOUS diſeaſes incident to the uterine ſyſtem, and other morbid affections of the abdominal viſcera, frequently ex-

cite the ſymptoms, and ſometimes aſſume the appearance, of uterine geſtation*. Complaints ariſing from a ſimple obſtruction, are ſometimes miſtaken for thoſe of breeding; and diſeaſed tumors any where in the pelvis, or about the region of the uterus, ſo nearly, in ſome inſtances, reſemble pregnancy in their ſymptoms, that the ignorant patient is often deceived, and even an experienced phyſican impoſed on.

SCIRRHOUS, POLYPOUS, or SARCOMATOUS TUMORS, in or about the Uterus or Pelvis; Dropſy or TYMPANITES of the Uterus or Tubes; STEATOMA or Dropſy of the Ovaria, and VENTRAL CONCEPTION, are the common cauſes of theſe falacious appearances. In many of theſe caſes, the menſes diſappear; nauſea, retchings, and other ſymptoms of breeding, enſue. Flatus in the bowels is miſtaken for the motion of the child; and in the advanced ſtages of the diſeaſe, from the preſſure of the ſwelling on the adjacent parts, tumefaction and hardneſs of the mammæ ſuper-

* Vid, Morgagni de cauſis et ſed. Morb. Ep. xlviii.

ſupervene, and ſometimes a viſcid or ſerous fluid diſtills from the nipple. Theſe circumſtances ſtrongly confirm the woman in her opinion; till time, or the dreadful conſequences that often enſue, convince her at laſt of her fatal miſtake.

False Conception. Mola. Other kinds of ſpurious geſtation, leſs hazardous in their nature than any of the preceding, may under this article alſo be claſſed.

When the fœtus is deprived of life, and diſſolved in the early months while it is in a gelatinous ſtate, the placenta often remains for ſome time in the uterus; its bulk is increaſed by additional coagula, and its conſiſtence in conſequence of abſorption. When it is excluded in this ſtate, it is called a *falſe conception.* When it remains longer, and acquires the conſiſtence of a ſcirrhus, without any traces of its ever having been an organic body, it is called a *mola.*

Mere coagula of blood, retained in the uterus after delivery, or after immoderate floodings at any period of life, and ſqueezed

by

by the resistance of the uterus, into a fibrous or compact form, constitute another species of mola, that more frequently occurs than any of the former. These, tho' they may assume the appearances of gestation, are generally expelled spontaneously, and are seldom followed with dangerous consequences.

CHAP. II.

PATHOLOGY *of* PARTURITION.

THE changes introduced by conception, frequently prove the source of disorders which assume a variety of appearance in different constitutions, and at different periods of pregnancy. These complaints are sometimes troublesome, but they seldom injure the constitution; their effects are generally temporary, their appearance and duration vague and irregular.

Some women, ſoon after conception, ſuffer the moſt violent ſickneſs and feveriſh indiſpoſition, which harraſs and diſtreſs them for ſeveral months; and, in ſome inſtances, continue during the whole term of geſtation. In others, the breeding ſymptoms diſappear after the early months. Many women feel no inconvenience but from the weight and preſſure of the bulky uterus in the advanced months; while others enjoy a more than uſually good ſtate of health and ſpirits in theſe ſituations.

In the pregnant ſtate, the courſes are generally ſtopped; and conſequently, the determination of the blood is altered: from this difference of determination many of the ſymptoms of pregnancy may be accounted for; particularly the appearance of a general, and ſometimes of a local, plethora. It muſt be confeſſed, however, that many of the ſymptoms appear to be entirely of the nervous kind, and not readily explicable in the preſent ſtate of our Phyſiology; but they are ſuch as the ſtop-

page

page of any accustomed evacuation will often produce.

In the advanced states of pregnancy, the pressure of the uterus on the surrounding parts produces many others, which we can with more certainty refer to their proper cause.

SECTION I.

Diseases of Pregnancy in the early Months.

THE most common symptoms of breeding are, sickness and loathing, vertigo and drowsiness, heartburn and diarrhœa, painful tension of the mammæ, nervous fits, deliquia, &c.

Sickness and Loathing. A slight degree of feverish indisposition, nauseating sickness, or vomiting, chiefly in the morning and after food, are in some instances almost coeval with conception; and the appetite is so whimsical and capricious, that the most extravagant and unaccountable substances are anxiously wished for.

The sickness from breeding is sometimes

ſo ſevere as to reſemble ſea-ſickneſs, and it is often as little in our power to relieve it. Theſe early ſymptoms have been generally aſcribed to the ſtoppage of the menſes, altho' they commence often before the obſtruction occurs. In many conſtitutions, however, particularly in the young and healthy, a certain degree of plethoric diſpoſition, even in the more early periods of pregnancy, ſeems to prevail; ſmall bleedings, therefore, where the ſickneſs is attended with fluſhings, dry parched mouth and fauces, vertigo, or any other ſymptoms of fever, are ſafe and beneficial, and often give all the relief in our power to afford. Although a raſh, indiſcriminate, or frequent uſe of venæſection is to be guarded againſt as a hazardous expedient; on the contrary, if prudently employed, it may often be the means of preventing abortion. It may be ſafely performed at any time of geſtation, and repeated according to the urgency of the ſymptoms. But ſmall bleedings are always to be preferred to copious evacuations; which, in every

every period of pregnancy, especially in the early months when the hazard of miscarriage is greatest, should be avoided.

When the stomach appears affected, along with constant loathing, or frequent retchings, the offensive matter should be discharged by gentle vomits of ipecacuan, or of infusions of chamomile flowers, or of carduus. The violent efforts of natural vomiting, which threaten the most disagreeable consequences, and sometimes actually throw off the conception, are in some instances entirely removed, in many cases greatly diminished, after the operation of a gentle emetic.

Small doses of rhubarb should be given to keep the body moderately open: the patient should also be put on a course of light, aromatic, and strengthening bitters; and her diet, air, exercise, and amusement, should be properly regulated.

In constitutions of the nervous irritable kind, opiates sometimes procure a temporary relief from sickness and vomiting, when every other remedy fails.

VERTIGO AND DROWSINESS.—These proceed from fullness and plethora, connected with a particular state of the nervous system. Small bleedings, when very troublesome, gentle exercise, an abstemious temperate diet, and every means of obviating plethora, and diverting the attention by promoting a cheerful state of mind, are the best remedies.

HEARTBURN, DIARRHOEA, &c. are common symptoms of breeding-sickness, and must be treated nearly in the same manner as similar complaints from other causes. They chiefly depend on the state of the stomach, peculiarly influenced by that of the uterus. The ascescent tendency of the stomach should be obviated, and the digestive faculty restored.

TUMEFACTION, TENSION, *and* PAINS *in the* MAMMÆ.—If tight lacing be only avoided, and the breasts be permitted to expand, no material inconvenience will arise from their enlargement. These symptoms are the natural consequence of a natural cause, and seldom require medical treat-

treatment. If they should be very troublesome and uneasy, bathing with oil, or anointing with pomatum, and covering them with soft flannel or fur, will in most cases lessen the painful tension. In plethoric habits, where painful hardness and swelling are excessive, and do not readily yield to more simple remedies, venæsection and gentle purging may be necessary.

DELIQUIA, NERVOUS or HYSTERIC FITS.—Lowness and depression of spirits are incident to the early stages of pregnancy, and are merely the effects of uterine irritability communicated to the nervous system; for the mind, as well as the body, is *then* peculiarly susceptible of irritation.

FAINTINGS more seldom occur, but about the term of quickening. They seem to arise from the sudden change of position of the uterus, emerging from its more close confinement within the bony parietes of the pelvis, and from the irritation communicated by the child's motion.

They are commonly ſlight and tranſient, and leave no bad effects behind them.

DELIQUIA, which are occaſioned by falls, frights, and paſſions of the mind, are of more ſerious conſequence, and the ſhock is frequently fatal to the child.

THE complaints which occur in the early months, require a variety of treatment in different circumſtances. When ſymptoms of fullneſs appear in young women formerly healthy and accuſtomed to live well, indicated by pain or giddineſs of the head, fluſhings in the face and palms; or when the ſickneſs is conſtant or exceſſive; venæſection, an open belly, with abſtemious diet, and every other means to obviate plethoric diſpoſition, muſt be uſed. But, in oppoſite circumſtances, where there is appearance of nervous delicacy, along with ſymptoms of dyſpepſia and conſequent debility, bleeding muſt be avoided with the ſtricteſt care. Nouriſhing diet given in ſmall quantities and often repeated, the moderate uſe of cordials, good air, cheer-

ful

ful society, easy exercise, variation of scene, suited to the peculiar circumstances of the patient, and, in a word, those means adapted to sooth or diminish sensibility and irritability of the system, and keep up the general health, are the most proper.

SECTION II.

Diseases of advanced Pregnancy.

THE disorders which attend the advanced months of gestation, are more sudden in their occurrence, more painful in their symptoms, and more dangerous in their consequences, than those of the early months. The loss of the child, and a temporary weakness, from which the mother, under proper management, soon recovers, are the worst consequences to be dreaded from the latter: But, from the compression of the bulky uterus on the contiguous viscera, their important functions are impaired, the circulation in the vascular system, and nervous influence, are materially

materially interrupted, and the moſt fatal event is ſometimes produced.

The diſorders incident to advanced geſtation chiefly are,—ſuppreſſion or difficulty of paſſing urine, retroverted uterus, coſtiveneſs, piles, œdematous ſwellings, varices, colic, cramps, pains in the back or loins, cough, diſpnœa, vomitings, ſtrangury, or incontinence of urine, convulſions, &c.

ISCHURIA and FREQUENT MICTURITION. Theſe ſymptoms are occaſioned by the preſſure of the uterus on the neck of the bladder, before the fundus uteri riſes above the brim of the pelvis. The retention of a ſmall quantity of urine then is a powerful ſtimulus to void it. If that is neglected, and the bladder becomes diſtended, painful iſchuria enſues. Women under theſe circumſtances ſhould be cautioned to avoid crowded places, and every ſituation which expoſes them to diſagreeable reſtrictions. A ſlight degree of ſuppreſſion, if early attended to, will ſeldom prove troubleſome or hazardous. It only requires

requires a constant attention to obey the dictates of nature, when the call to evacuate the urine is urgent; to keep the belly regular; to lie down on a bed or sofa from time to time, when pained or uneasy; and carefully to guard against fatigue, and confinement in a crowded place, till the uterus be so much enlarged, as to be supported by resting on the expanded bones of the ilia.

RETROVERTED UTERUS.

As the gravid uterus enlarges, it sinks downwards, till it becomes too bulky to be longer confined within the bony cavity: but if, from the uncommon capacity of the pelvis, any extraordinary exertions, violent fatigue, obstinate costiveness, or the distention of the bladder with urine, the uterus should be prevented from emerging above the brim of the pelvis, the fundus will sink lower and lower, falling backwards into the inferior posterior part of the pelvis; the os tincæ will then be drawn upwards towards the pubes, making

king the ſuperior part, and the fundus forming the moſt depending part of the tumor.

This reflected ſtate of the prolapſed gravid uterus is ſtyled *retroverſion*; and is readily known by the ſymptoms, and from the period of pregnancy in which it occurs.

It chiefly occurs between the third and the end of the fifth month of pregnancy. The ſymptoms are, an increaſe of thoſe uſually occaſioned by painful diſtention of the bladder with urine, conſtant weight, and uterine pain and preſſure, teneſmus and other ſymptoms ſometimes reſembling the ſevereſt throes of labour. A tumor will be alſo felt to the touch between the vagina and rectum, which occupies the whole inferior capacity of the pelvis, prevents the finger from paſſing into the vagina, and preſſes againſt the perinæum and anus, like the child's head in time of labour.

In the beginning of the diſeaſe, the urine is voided with difficulty; in the progreſs,

progreſs, ſtools and urine are totally retained. As the bladder diſtends, it draws the cervix uteri up with it; the uterus, growing bigger and bigger, ſinks lower, ſpreads out beyond the inferior circumference of the pelvis, and occaſions conſtant ſtraining and preſſing. The throes at laſt become ſo violent, that the uterus ſeems ready to be protruded without the vulva. The inferior lateral openings of the pelvis yielding to the diſtending cauſe, as they do in real labour, the tumor becomes ſo bulky, as, in ſome inſtances, to elude the poſſibility of reduction *. Laceration of the coats of the bladder, inflammation communicating to the viſcera, delirium or convulſions, and the moſt fatal event, ſoon enſue, if the means of relief are neglected or prove ineffectual.

The cure conſiſts in reſtoring the uterus to its proper poſition, and guarding againſt the hazard of relapſe.

Previous

* *Vide* Dr Hunter's Plates of the Gravid Uterus, Pl. xxvi. London Medical Obſervations and Inquiries, Vol. IV. art. xxxvi

Previous to attempting the reduction of the uterus, the counteracting obstacles must be removed. With this view, repeated venæsection may be necessary; fomentations, or the semicupium, should be used to diminish swelling and inflammation; the catheter should be passed to evacuate the urine; and the rectum should be washed out with repeated glysters.

The reduction of the uterine tumor should then be attempted, by placing the patient on her knees and arms, with her head reclined and properly supported, endeavouring, by every possible means, to restore the uterus to its proper position. The force employed should be gentle at first, pressing backwards and upwards in different directions, (to draw the os tincæ down from the pubes), not by starts, but constantly and equally, gradually increasing the exertions of force, as far as they can safely be carried, till the end in view be obtained.

After the reduction the patient must be confined mostly to bed, and the distention of

of the bladder and rectum must be carefully prevented, till the uterus rises above the brim of the pelvis, when she will be secured from future danger. But if the obstinacy of the disease should render every effort ineffectual either to evacuate the urine or replace the uterus, it has been proposed to puncture the bladder at the pubes; and, if that should fail to facilitate the reduction, to thrust a trocar into the substance of the uterus to procure abortion; or to enlarge the pelvis by incision at the symphysis pubes, in order to accomplish the reduction of the uterus.—The two first proposals are shocking and desperate: the last gives a more reasonable prospect of saving both the mother and child.

COSTIVENESS. This symptom is a common attendant of pregnancy. The occasional causes are, the pressure of the gravid uterus, a disordered state of the stomach, and sedentary life.

It may be obviated or prevented, by attention

attention to diet, and the occaſional uſe of gentle laxatives; of theſe ripe fruit, magneſia, cream of tartar, ſoluble tartar, lenitive electuary, ol. ricini, or an aloetic pill, when the patient is not ſubject to any hæmorrhoidal affection, or has been formerly accuſtomed to it, are the moſt proper.

But in caſes of obſtinate coſtiveneſs, to break down and remove indurated ſcybili, emollient glyſters, occaſionally rendered moderately ſtimulent with ſoap, or a ſmall proportion of common ſalt, ought to be repeatedly exhibited.

Piles—are ſmall tumors placed a little way within the rectum, or protruding like varicous ſwellings without the verge of the anus, attended with throbbing pain, heat, itching; frequently with fever and reſtleſſneſs, and ſometimes liable to frequent or exceſſive hæmorrhagies. Their occaſional cauſes chiefly are, coſtiveneſs, and venous plethora from geſtation.

The treatment ſhould be directed nearly

on the same principles as similar cases from other causes, with the precaution which pregnancy suggests. Costiveness must be obviated by cooling laxatives; of which cream of tartar and flowers of sulphur are the best. General or topical bleedings should be used, to lessen plethora or local inflammation; and fomentations and cataplasms, emollient or saturnine, applied, to disperse the swelling, or promote supperation. For allaying the pain often attending piles when the inflammation is removed, *pulv. gallarum* and *axung. porc.* in the form of ointment, has been much recommended. *Bals. copivi* is also an excellent remedy in piles, and keeps the belly moderately open.

OEDÆMATOUS SWELLINGS of the *Legs*, and sometimes extending to the thighs and labia, arise from the same cause with the preceding complaint, viz. venous plethora from the pressure of the uterus. They are merely symptomatic, and only attended with a temporary inconvenience; as almost in every instance, where the con-

ſtitution is otherwiſe unimpaired, they ſubſide immediately after delivery.

The beſt pallatives are—ſmall bleedings and gentle purgatives, with a light ſpare diet, if the patient be full and plethoric; if otherwiſe, ſtrengthening diet, the moderate uſe of cordials, an open belly, frequent reſt on a bed or couch; and, in either caſe, eaſy excercise when ſhe is able to bear it, and friction with a fleſh-bruſh, applied to the legs evening and morning, to promote the circulation and abſorption of the ſtagnant fluids.

Varicous Swellings are merely diſtentions of the coats of the veins from venous plethora, occaſioned by preſſure of the gravid uterus. They are generally confined to the legs or thighs, and ſeldom proceed ſo far as to burſt and throw out their contents. When very large or painful, gentle evacuations may be neceſſary; and topical aſtringent applications uſed, to remove local laxity; as compreſſes ſoaked in any ſtyptic liquor, and retained by the application of a bandage. A moderate preſſure

pressure on the part by compress and bandage, when the accumulation is considerable, will, in most cases, be sufficient to remove any inconvenience occasioned by the swelling, till delivery; soon after which, they generally disappear, or are considerably lessened.

PAINS in the BACK or LOINS, COLIC, CRAMP,—are occasioned by the stretching of the uterus, or by its pressure on the neighbouring parts, particularly on the diaphragm. They are most troublesome in a first pregnancy, or when the distention of the abdomen is enormous.—Small bleedings, gentle laxatives, a light spare diet, and occasional opiates, are the best palliatives.

If the patient be of a full habit, and where a disposition to inflammatory complaints prevail, any violent fixed pain about the back or loins, along with fever, or in the abdominal viscera, exciting symptoms of *Colic*, is highly alarming and dangerous in advanced gestation where the pressure is great. The threatening event

can only be prevented by repeated venæſection, and the antiphlogiſtic treatment.

Cramps are ſometimes very troubleſome towards the latter end of geſtation. They are chiefly confined to the legs and thighs, more rarely they affect the belly, and are moſt troubleſome during the night. Their occaſional cauſes are, the ſtretching of the womb, or its continued preſſure on one particular part.—When frequent or violent, and the habit is full or plethoric, bleeding is neceſſary, The ſudden expoſure of the body to cold, or change of poſture, as getting out of bed and walking about, may be often ſufficient to give a temporary relief; and opiates may be uſeful to leſſen nervous irritability.

Cough, Dispnoea, Vomitings, Difficulty or incontinency of Urine.—The cauſe in advanced geſtation is ſufficiently obvious. The former of theſe ſymptoms are chiefly to be alleviated by ſmall bleedings, gentle laxatives, light ſpare diet, and opiates. The patient ſhould be placed, when in bed, in an eaſy poſture,

ſture, with her head and ſhoulders conſiderably raiſed, and the bed-room ſhould be as large and airy as poſſible. Bandages, adviſed by many when the uterus riſes very high, are dangerous expedients for altering its direction; and ſtricture in dreſs, with a view to hamper and confine the uterus, can never be employed with ſafety.

To prevent the conſequences of frequent micturition, or incontinency of urine, a ſuſpenſory and thick linen compreſs, or ſponge, ſhould be conſtantly worn, and occaſionally ſhifted as it becomes damp.

CONVULSIONS.

The appearance of epileptic fits in pregnant women is frightful; the ſymptoms are alarming; and the event is always precarious, often fatal.

The paroxyſms generally come on without any obvious prelude. Headach intolerably violent, or intenſe pain or oppreſſion about the præcordia, are the moſt common preſaging ſymptoms.

At whatever term of geſtation, there is great danger; but, in the advanced months, the diſeaſe is more deſperate. The danger is alſo to be judged of by the violence of the ſymptoms, the duration and recurrence of the fits, connected with the occaſional cauſe and conſtitutional temperament of the patient, and from her condition during their remiſſion.

The remote cauſes are, Increaſed irritability from pregnancy, particularly uterine irritability communicated by ſympathy to the encephalon, in ſome inſtances probably originating from the ſtruggles or convulſive motions of the fœtus, ariſing from its aukward or hampered poſition; and preſſure of the gravid uterus interrupting the circulation through the abdominal viſcera, diſturbing their functions, and changing the determination both of the circulating fluid and nervous energy. They may alſo ariſe from inanition, in conſequence of profuſe hæmorrhagies, or other debilitating evacuations; or be occaſioned by mechanical injury of the

the uterus, from violent bruises, wounds, &c. and by passions of the mind, and other occasional causes sufficient to bring on convulsions in the unempregnated state.

Hysteric or nervous spasms are readily distinguished from convulsions. The former are milder than the latter in their symptoms; and much less frightful in appearance, by the absence of foamings and distortions: They have no sensible effect in bringing on labour; they are seldom followed with bad consequences; and yield to the common treatment. Women of vigorous constitutions, rigid fibres, and plethoric habits, are more usually the subjects of the latter: the delicate, the nervous, and irritable, of the former.

Convulsions, during pregnancy, may be referred to three dictinct periods at which they may occur; those of the early months, those of the latter, and those that come on along with labour.

1. Those which appear in early gesta-

tion, chiefly happen to young women of a plethoric habit; and can only be obviated or palliated by a free uſe of the lancet, by gentle purging, cooling regimen, and low diet. After ſome evacuations in this way, if conſtant nauſeating ſickneſs *ſtrongly* indicate a diſordered ſtomach, a mild emetic may be of uſe; but it ſhould be employed with the moſt judicious and guarded caution.

In oppoſite circumſtances, a different treatment muſt be directed. Opiates, or caſtor and muſk given internally, emollient glyſters, warm fomentations applied to the legs, the ſemicupium, and every means to ſoothe nervous irritability and remove ſpaſmodic ſtricture, will then prove the moſt effectual remedies. When it cannot be received into or retained in the ſtomach, opium, in large quantities, ſhould be exhibited by way of glyſter.

When the patient is totally inſenſible and comatoſe, ſtimulating purgative glyſters ſhould be given; and epiſpaſtic and ſtimulating cataplaſms, in order to rouſe

her, should be applied to the legs and hams. In desperate circumstances, the semicupium, or warm bath, should be frequently used, and long continued, with a view to relax and open the orificium uteri, and bring on labour.

In the intervals of the paroxysms, or after they have ceased, the patient, when languid or much reduced, must be supported by nourishing diet and suitable cordials; and, when she is no longer able to swallow, nourishment must be supplied by way of glyster.

2. In the advanced months, the attacks are more sudden, the progress more rapid, and the event more fatal, than in early gestation: therefore the most active and vigorous measures are necessary; for, like apoplexy, a fit or two then, in some instances, terminates the disease with the loss of life. If any treatment can prevent the threatening catastrophe, immediate and copious venæsection, occasionally repeated, may chiefly be relied on.

Other means for lessening plethora, obviating

viating the effects of violent agitation, and rendering the ſyſtem leſs irritable, muſt afterwards be employed, and the treatment otherwiſe directed according to particular circumſtances.

3. Laſtly, When convulſions come on along with labour-pains, they muſt be palliated by ſome of the means already directed, till the delivery can be ſafely aſſiſted by art.

SECTION III.

Some ordinary Diſeaſes which require peculiar treatment when they occur during Pregnancy.

BESIDES thoſe hitherto enumerated as more immediately deriving their origin from pregnancy, other diſorders ſometimes occur, which may then require ſome variety from the uſual management. Theſe are chiefly, Paralyſis, nephritis and calculi, herniæ, dropſy, leucorrhœa, venereal complaints, fevers.

PARALYSIS is generally local, and chiefly confined to the lower extremities, or

may be traced by the course of the nerves to depend on the pressure of the uterus. The treatment can only be directed with a view to palliate till delivery. Gentle exercise, moderate evacuations when the habit is full, otherwise strengthening diet and regimen, with warm applications and friction, are the principal remedies.

Nephritis and Calculi. The former must be palliated by venæsection, diluent drinks, opiates. If the calculus sticks in the urethra, and the woman is near her time, it should, if possible, be pushed back into the bladder with the catheter: otherwise, when easily come at, the stone may be cut upon and extracted.

Herniæ. Some of these are cured by pregnancy; others continue during the whole term of gestation. Bandages can seldom be used with safety in the pregnant state; at least tight pressure by the common umbilical bandage must be avoided. In time of labour, they must be carefully supported with the hand during a pain; after delivery, future inflammation and its

conse-

consequences must be guarded against; the usual bandage must again be applied, when the patient is sufficiently recovered to be able to stay any time out of bed after delivery.

The HYDROPS ASCITES—in pregnant women, sometimes also occurs; and will, during that state, only admit of palliation. The belly must be kept open; the evacuation of urine, as much as possible, must be promoted, by cream of tartar, dried squills, and the like; and gentle exercise must be used. If, however, the abdomen be much distended, the respiration difficult, and other symptoms urgent, the water may be safely drawn off by the operation of the paracentesis.

THE FLUOR ALBUS OR LEUCORRHOEA—is sometimes cured, sometimes increased, by gestation. Except the little variety which an attention to the gravid state requires, the cure is the same as at other times.

GONORRHOEA and LUES VENEREA.—The cure of the former is to be conducted in pretty much the usual manner; that

is,

is, by keeping the parts clean by frequent bathing, by drinking freely of diluent drinks, by an open belly and cooling diet. If complicated with ulcers and chancres within the labia, or any where about the vulva, the prudent use of mercury becomes requisite: It may either be given internally, or rubbed on the skin by way of unction.

In the confirmed lues, we can only, in general, propose to stop the progress of the disease, or palliate the severity of the symptoms. But, in early pregnancy, when the constitution is good, and the season favourable, if a mercurial course be regulated with prudence, both mother and child may obtain a radical cure. The proper time for entering on such a course is between the third and six months. When a radical cure is attempted, the safest method of administring mercury seems to be in the way of unction: As a palliative, the solution of corrosive sublimate is the most powerful preparation. To prevent diarrhœa and colic

complaints, opiates always ſhould be conjoined.

Fevers.—Women are leſs ſubject to febrile diſorders during pregnancy than at other times. There is, however, an univerſal heat all over the body; which with ſome is a ſymptom of conception, and with others continues during the whole term, that hardly deſerves that name.

The limits of the preſent work neither admit of our entering into any diſquiſition on the nature of fever in general, or of the treatment of the variety of ſpecies. All great evacuations muſt then be avoided, and whatever might excite any violent ſhock to endanger abortion and its conſequences. The treatment muſt otherwiſe be directed on the common principles, attending to the management neceſſary to be obſerved in circumſtances ſo peculiarly critical.

SEC-

SECTION IV.

Of Floodings and Abortion.

ABORTION, and its common attendant FLOODING, are neither confined to the early nor latter months; but happen indiſcriminately to every period of geſtation. The one is a frequent conſequence of the other, and the event is often hazardous. In the earlier months, when the child has little life, a conſiderable diſcharge of blood frequently precedes the expulſion of the ovum; and, in the latter ſtages, the effuſion is ſometimes ſo exceſſive as to endanger the mother's life.

Their more frequent terms of occurrence are, in early geſtation, the ſecond and third; in advanced pregnancy, the fifth and ſeventh months.

I. FLOODING.

THE *Mænorrhagia Gravidarum* may be defined, "A vague or irregular appearance of "blood from the uterus, ſubject to no periodical returns, but liable to recur from "very ſlight occaſional canſes."

The

The immediate cauſe is, the ſeparation of ſome portion of the ſubſtance of the placenta, or membrana decidua, from the uterus.

The ſeparation may be more remotely produced,

1. By plethora.
   a. General plethora of the whole ſyſtem.
   b. Partial plethora of the uterus and neighbouring parts, occaſioned by
      External accidents; as,
         Blows, cold, &c.
      Internal cauſes; as,
         Tumors compreſſing ſome of the neighbouring arteries,
         Effects of ſuppreſſed perſpiration from the depreſſing paſſions, &c.
         Effects of conſtipation, or the ſtoppage of any other neceſſary diſcharge.
2. Debility.
3. Direct affections of the uterus and placenta.
4. Stimuli communicated from an affection of other parts.

Flood

Floodings ſeldom prove fatal to the mother before the ſeventh month of geſtation, but are afterwards proportionally more alarming and dangerous. In the early months, there is always hazard of the loſs of the fœtus, even from an inconſiderable diſcharge; and from the increaſed diameter of the blood-veſſels in the more advanced periods, the diſcharge is often fatal to the parent.

To check the hæmorrhagy, the indications are,

I. To diminiſh plethora, as well as the impetus of the heart and arteries.

II. To reſtore a more equable circulation in the whole ſyſtem.

III. To reſtore the tone of the ſolids, and promote the conſtriction of the veſſels.

1. To anſwer the firſt intention, venæſection, a free circulation of cool air, cooling diet, drink, and other refrigerants, are the principal remedies.

2. The ſecond indication is with difficulty followed; for the exertion which the

ſeveral remedies that produce this effect occaſion, will be often very hurtful.

Vomiting, and purging except with the moſt cooling neutrals, are ſeldom admiſſible; and warmth, applied to the ſurface, is equivocal in its effects. The only means, therefore, which we can recommend with this view, is to keep the feet warm with flannels and gentle friction, and the body and mind in the moſt perfect tranquillity. Opium, in the form of Dovar's powder, is alſo frequently effectual in rendering the circulation more uniform and equable. Might not the opium and ipecacuan only, be kept mixed, and the powder given in theſe caſes, in a freſh ſolution of nitre, in a full doſe? Such a formula would probably be a powerful remedy for hæmorrhagies of all kinds.

Some of the cauſes which we have mentioned are evidently beyond our reach. Theſe indications are, however, chiefly uſeful in the early ſtages; the evacuation itſelf ſoon takes off plethora, as well as the hæmorrhagic effort of the heart and arteries; ſo that the chief buſineſs of the practitioner is,

3. To

3. To restore the tone of the solids, and promote the constriction of the vessels. With this view, internal astringents, and the application of cold, are the most effectual means. The styptics generally employed are, the vitriolic acid, alum, terra Japonica, and gum kino: but cold applications to the pudendum and neighbouring parts are chiefly to be trusted; as thick linen compresses wet with cold vinegar and water, applied to the os externum, pubes, and loins, and often renewed lest they should become warm. A bladder with cold water, in which some crude sal ammoniac is dissolved, may be used for a topical application, and will retain the cold fluid longer than any other compress.

By thus keeping the patient quiet and cool, by giving internally cooling things and opiates, and by the application of cold to the organ affected, the hæmorrhagy may be restrained, tho' threatening and alarming; and the woman, after several attacks, may, under proper management, be enabled to carry the child to the full term of delivery.

Debility and relaxation muſt afterwards be removed, by nouriſhing diet and tonic remedies; and, in relaxed habits, the hazard of relapſe guarded againſt by the uſe of the Peruvian bark, moderate exerciſe, and the other remedies uſually employed after caſes of profuſe menorrhagia. In full habits, or where there is an evident diſpoſition to plethora, gentle evacuations, cooling regimen, and an abſtemious ſpare diet, are the beſt prophylactics.

In the latter end of pregnancy, when the hæmorrhagy proceeds from the ſeparation of a portion of the cake which adhered at the cervix, over the orificium uteri, the deluge is ſometimes ſo impetuous as to kill the mother very ſuddenly. The only method, then, in our power, for preſerving both the parent and child, is by an *expeditious delivery;* I mean expeditious with reſpect to the time it is attempted, for the operation of delivery ſhould be ſlowly performed.

In all caſes of flooding, when any portion of the pappy ſubſtance of placenta can be felt by the finger to preſent before the

the child, delivery should be performed as soon as the orifice of the womb is sufficiently relaxed to admit of the introduction of the hand, after gently stretching*: and if the repetition of floodings without pain be frequent, or the discharge so profuse as to bring on faintings, it may be necessary to deliver, even though there should be no sensible dilatation of the uterine orifice, and though no part of the placenta can be felt to the touch; for, if the woman is previously much exhausted, she cannot be saved by delivery.

II. ABORTION.

ABORTION is "The premature delivery "of the fœtus;" which comprehends every period before the evolution of its system be sufficiently complete to enable the child to exist after the connection with the parent is dissolved.

Some authors still make the following distinction. When the ovum is expelled in the early months, they call it an *abortion*; and,

* See a valuable essay on this subject by Mr Rigby.

and, if the fœtus be delivered at any period between the fifth month and the full time, a *miſcarriage.*

Abortion is commonly preceded by ſome of the following ſymptoms: Flooding, pains in the back or belly, uterine bearing-down pains with regular intermiſſions, the diſcharge of a watery fluid.

If, along with flooding, any portion of a vaſcular ſkinny ſubſtance, which is the membrana dicidua, ſhould be diſcharged, abortion for certain will enſue. None of the other ſymptoms are infallible; even the evacuation of a watery fluid is not neceſſarily followed with delivery, ſince it may proceed from a collection on the outſide of the ovum, between the lamellæ of the membranes. In the early months exceſſive floodings ſometimes occur; and yet, by proper management, the woman is often enabled to retain the child.

There is leſs fear of abortion while the blood evacuated is pure and without clots, unattended with uterine pain and preſſure. But, in forming a judgment, the conſtitution,

tion, occasional cause, and term of gestation, must be regarded.

Abortions happen more frequently from the beginning of the second to the end of the third month, than at any other period.

The immediate cause of abortion is the same with that of real labour.

The more remote causes are,

I. Whatever interrupts the regular circulation between the uterus and placenta; as,
   1. Diseases of the uterus.
   2. Imperviousness, or spasmodic constriction, of the extremities of the uterine blood-vessels.
   3. The separation of any portion of the cake, or decidua, from the uterus.
   4. Determination of the fluids to other parts.

II. Every cause which prevents the distention of the uterus, or excites spasmodic contraction of its muscular fibres; as,
   1. Extreme irritability, preventing the extension of that organ.

2. Violent exertions, as coughing, ſneezing, vomiting, ſtraining at ſtool; mechanical injuries, as ſtrains, falls, &c.
3. Irritation from the confined motion of the fœtus, its kicking or ſtrugglings.
4. A habitual diſpoſition to abortion.

III. The death of the fœtus; which may be occaſioned from,

1. Diſeaſes peculiar to itſelf.
2. An original defect tranſmitted from the parents.
3. External accidents affecting the mother.
4. Diſeaſes of the placenta, membranes, or cord.
5. Too ſlight adheſion of the cake or membranes to the uterus.
6. Weakneſs, or want of reſiſtance, in the texture of the membranes; or an exceſſive quantity of the liquor amnii.
7. Knotty circumvolutions of the umbilical cord.

The

The ſize of the abortive ovum in early geſtation is as follows: Six weeks after conception, its bulk is nearly equal to a pigeon's egg; in eight weeks, to that of a hen; and in twelve to that of a gooſe.

Where there is reaſon to dread abortion, every probable mean ought to be employed to relieve painful ſymptoms by reſt and opiates, to check hæmorrhagy by the means already directed, and to obviate occaſional cauſes as much as poſſible; and the woman ſhould be encouraged to hope as long as there is grounds for it.

As abortion, in many inſtances, is preceded by no alarming ſymptom, till a diſcharge of watery fluid, or an exceſſive flooding with clots and portions of the decidua, announce the approaching event; either to remove immediate ſymptoms, or prevent the accident that is dreaded, often baffles our boaſted ſkill; for the circulation in the ovum perhaps had ceaſed a conſiderable time previous to any threatening ſymptom of its expulſion.

Little,

Little, therefore, can or ought to be done by way of treatment, beſides obviating plethora, adviſing reſt of body and tranquillity of mind, and guarding againſt every cauſe of irritation. Though the mother may ſuffer a conſiderable ſhock from miſcarriage, and it may be ſome time before her conſtitution be ſufficiently reſtored for any future fortunate pregnancy, women are rarely known to ſuffer fatally, but from miſmanagement in the early months. Any manual operation to aſſiſt delivery, is ſeldom neceſſary at an earlier period than the ſixth month of geſtation, unleſs the mother's life ſhould be in danger from flooding. When this happens, the bag may be broken by thruſting the finger againſt it in time of pain, or endeavouring to aſſiſt its expulſion when within reach of the finger; but otherwiſe the delivery ſhould be *wholly* truſted to nature. It is even hazardous to deſtroy the ſtructure of the ovum in the early months: for when it breaks, the ſmall fœtus is firſt expelled; and the bag or placenta may be

afterwards retained for a week or more, during which time the flooding often continues to be exceſſive; whereas, if the conception comes off entire, the effuſion generally ceaſes immediately.

From long retention, the placenta, without circulation, is liable to become putrid: it is then expelled in different portions; and inflammation, excoriation, or gangrene of the uterus and vagina, often enſues. In theſe circumſtances there is a neceſſity for keeping the parts clean, by frequent bathing, or by injections thrown into the vagina; and bark, with elixir of vitriol, ſhould be given freely. Gently ſtimulating glyſters, to promote the contraction of the uterus, in caſes of retention of the placenta, where there is no great flooding, are often uſeful.

As women who have once aborted are liable to a repetition of that accident from a ſimilar or very trifling occaſional cauſe, it ought to be guarded againſt by every poſſible means. With this view, the management

nagement during pregnancy ſhould be properly regulated.

SECTION V.

Management during Pregnancy.

THE regulations during pregnancy may be referred to the following rules.

1. The ſtricteſt temperance and regularity in diet, ſleeping, exerciſe, and amuſement, are neceſſary to be obſerved by thoſe who have reaſon to dread abortions.

2. Overheating, irregular paſſions, and coſtiveneſs, ſhould be conſtantly guarded againſt.

3. The hazard of ſhocks, from falls in walking or riding, from bruiſes in crowds, or frights from buſtle, ſhould be avoided with the utmoſt circumſpection.

4. The dreſs of pregnant women ought to be looſe and eaſy. Tight lacing is injurious at every period of geſtation. In the early months, by preventing the uterus from riſing out of the pelvis, it endangers miſcarriage, and is ſtill more hazardous in the advanced ſtages. Jumps, with-

out

out knots, buckles, or whale-bone, secured with straps of broad tape or ribbon, should be had recourse to soon after conception, and worn constantly.

5. Pregnant women require free, pure air; their inclinations should be gratified by every reasonable indulgence; and their spirits kept up by cheerful company and variety of objects, that their minds may be always composed and happy.

6. If complaints then occur, they should be treated nearly as at other times, with the precautions formerly suggested of avoiding all great evacuations and violent exertions. Drastic purges, stimulating glysters, emetics towards the term of quickening or any other critical period, strong diaphoretics or diuretics, shocks from electricity or the cold bath to those who have not been accustomed to them, the hazard of accidents from riding or sailing, and of the consequences of irritation from the action of blisters or the absorption of flies in particular circumstances and constitutions, ought to be carefully guarded against.

againſt. In the early months, abortions might be readily occaſioned from ſuch hazardous expedients; and in the latter, the moſt alarming and dangerous floodings.

7. Laſtly, With a view to prevent abortion in caſes of habitual prediſpoſition, in plethoric habits, or in thoſe of an oppoſite temperament, occaſional cauſes muſt be obviated, and the particular fault in the conſtitution corrected.

PART

PART III.

LABOURS.

INTRODUCTION.

§ 1. *General Obſervations.*

WHEN the uterus will admit of no greater diſtention, without a material, or probably fatal diſorder, from its impeding the ſeveral functions, labour enſues.

At this period, the organization of the fœtus is ſufficiently evolved to enable it to continue its exiſtence; for, as it derives no

no injury from a longer delay, ſo it can ſurvive a ſlight acceleration of this important change.

The period of geſtation varies in the ſeveral claſſes of different animals. The mare, the cow, the ewe, and the goat, are reſtricted, each within its proper limits. In the human ſpecies, nine kalendar months ſeem neceſſary for the perfection of the fœtus; that is, nearly 39 weeks, or 273 days, from conception. The term does not, however, appear to be ſo arbitralily eſtabliſhed, but that Nature may tranſgreſs her uſual laws; and, as many circumſtances frequently concur to anticipate delivery, it certainly may in ſome inſtances be protracted. Individuals of the ſame claſs of quadrupeds, it is well known, vary in their periods of pregnancy. May we not from analogy, reaſonably infer, that women ſometimes exceed the more ordinary period? In ſeveral tolerably well atteſted caſes, the birth appears to have been protracted ſeveral weeks beyond the common term of delivery. If the character of

the woman be unexceptionable, a favourable report may be given for the mother, though the child ſhould not be produced till nearly ten kalendar months after the abſence or ſudden death of her huſband.

LABOUR is " an effort of nature to expel the contents of the gravid uterus." It is chiefly accompliſhed by the ſpaſmodic contraction of the uterus itſelf. The diaphragm, muſcles of the abdomen, and others concerned in reſpiration, and all the muſcles of the body, are called in as auxiliary powers. Theſe efforts alternate with intervals of eaſe; and the exertions, or paroxyſms, continue till the child is propelled, and the uterus completely emptied of its contents.

The *immediate cauſe of labour* ſeems to be, " Irritation, from previous diſtention of " the uterus, compreſſing the fœtus and " waters." The uterine contents being propelled againſt the orifice, the muſcular ſtructure of that organ will be ſtimulated

 into

into action, and labour-pains consequently ensue.

The *final cause* of labour is, the birth of the child.

Spurious pains frequently occur towards the latter end of gestation. Their causes are a slight degree of irritation of the uterus from excessive stretching; spasmodic affections of the abdominal viscera; or, any stimulus communicated from the intestinal canal, as colic from costiveness and other causes. They often nearly resemble labour, and ought to be carefully distinguished from it.

They are more vague and irregular, both in frequency and force, than those arising from genuine labour; they do not produce any sensible change on the orificium uteri; they are not attended with any considerable discharge of the ropy mucus, which sometimes precedes, and always accompanies, the first stage of real labour. They are generally confined to the lumbar region, or to the belly, without striking down the thighs; they are commonly most trouble-

troublesome towards evening, occasion inquietude and restlessness in the night, and abate in the morning. They are further known to be spurious, by the relief procured from glysters and opiates.

Genuine labour is known to approach from the circumstances which usually precede it: the progress is marked by the duration, force, and frequency of the pains; by their effects on the general system; more particularly by the dilatation of the uterine orifice, and protrusion of the water and child.

The *symptoms of approaching labour* are, the subsiding of the abdominal tumor at the superior part; hence, at first, a relief from weight, pressure, and uneasiness formerly felt; afterwards, a discharge of ropy mucus from the vagina, sometimes tinged or streaked with blood, commonly styled the *shews;* then, slight pains of the belly or loins, frequent micturition, tenesmus, sometimes colic or diarrhœa, extreme restlessness, alternate rigours and hot fits.

The throes of labour usually commence

with pain in the region of the loins, which ſpread round forwards and downwards, and again extend from the belly to the pubes, ſhooting down the thighs. At firſt they are vague, more ſlight and tranſitory; but gradually increaſe in force, and recur at more regular intervals.

Sickneſs of the ſtomach, retching, and vomiting, alternate rigours and hot fits, in ſome inſtances accompany the earlieſt ſymptoms of labour; in others, horripulatio occurs in the progreſs, and ſeems then to be occaſioned by the preſſure of the head of the fœtus againſt the irritable uterine orifice.

Pyrexia, in young plethoric women, is a frequent attendant of labour; for, with increaſed pain, the face becomes fluſhed, the pulſe full, ſtrong, and accelerated, along with dry parched mouth and fauces, and the other ſymptoms of fever, ſtyled by authors *febris parturiens*. Iſchuria, or ſuppreſſion of urine, and ſometimes an involuntary diſcharge of fæces, enſue.

The

The *progreſs of labour* generally proceeds in the following manner.

In conſequence of the great diſcharge of lubricating moiſture, the genital parts are firſt relaxed, and then gradually begin to dilate. The membranes alſo gradually ſeparate from the internal ſurface of the uterus; and, by its ſpaſmodic contractions, the membranes and contained water are protruded in form of a ſoft, yielding bag, before the preſenting part of the child. In the abſence of the pain, the waters retreat; the membranous bag is relaxed, or flaccid; and the child, if within reach, can be diſtinctly felt through it. When the pain recurs, the membranes become tenſe and turgid; ſpread out more and more; and, advancing lower and lower as the pains increaſe in force and frequency, they gently and ſafely ſtretch and dilate the paſſages preparatory to delivery, in a manner which no human artifice can poſſibly imitate. When that important end is accompliſhed, the ſlender bag, yilding to the propelling

force, gives way, and the contained fluid is evacuated.

In a natural eafy labour, the progrefs of the head of the fœtus through the pelvis correfponds with the protrufion of the membranes and dilatation of the foft parts. The head advances in a mechanical manner, its large axis being generally applied to that of the pelvis. When the vertex is nearly arrived at the lower circumference of the bony cavity, the membranes give way; foon after which, the pains are renewed with increafed force. The vertex advances through the axis of the vagina; the occiput gradually emerges from under the arch of the pubes; and the foft parts at the bottom of the pelvis beginning to be protruded in form of a tumor, the os externum is gradually dilated. As the occiput rifes from below the pubes, the face is turned towards the concavity of the facrum; the forehead preffes againft the moveable coccyx; the vertex now protruding without the os externum, and the ftimulating exertions becoming fo excef-

five

ſive as to throw the whole frame into the moſt violent agitation, the os externum is forced open, and the head of the child propelled. After ſome interval of eaſe, the pain, in a more moderate degree, recurs; and continues till the child is completely delivered, the ſhoulders making the ſame mechanical turns with the head.

When the woman has ſomewhat recovered the ſhock, the uterus again renews its contractions; and, by a more gentle and moderate exertion of the ſame powers by which the membranes were ſeparated and protruded and the child was propelled, the placenta is detached from its adheſion to the womb, forced downwards to the orifice, and expelled.

This is the manner and progreſs of natural eaſy labour. But a variety of circumſtances frequently concur to diſappoint our hopes, and render the birth tedious and painful. The original poſition of the fœtus *in utero;* the bulk, ſhape, and ſolidity of the head; the age, conſtitution, and previous condition, as well as preſent health

and management of the patient; the action of the uterus itſelf, conſidered as a hollow muſcle; the rigidity of the os tincæ; the conſtruction and capacity of the pelvis; the texture of the membranes; the tightneſs or conſtriction of the vagina; the reſiſtance of the os externum, &c. occaſion an aſtoniſhing variety in the degree of pain, the progreſs or duration, and manner of termination of labour. Practitioners ſhould therefore be cautious of giving an opinion reſpecting the time of delivery, at leaſt till the progreſs be conſiderably advanced.

A judgment of the duration and event of labour is chiefly to be derived from the force, continuance, and recurrence of pains; from the reſiſtance of the os tincæ, or the contrary; from the period when the membranous bag is ruptured; from the poſition of the child's head, and relative proportions that obtain between it and the pelvis.

Young women, apparently well proportioned, of a lax fibre and healthy conſtitu-

tion,

tion, may be preſumed to have eaſy, favourable labours. We may expect the delivery to be tolerably eaſy and expeditious, when the pains come on regularly; when the child preſents properly; when the membranes begin early to form a bag, and protrude without the os tincæ; when it is thin, ſoft, and yielding, and is felt by the touch to dilate ſenſibly by the force of the pains; when the head can be felt thro' the membranes during the remiſſion of pain, advances progreſſively through the pelvis, preceded by the amnion tumor and the rupture of the membranes, when the head can be felt to preſs againſt the orificium uteri.

But, even in theſe circumſtances, the progreſs of labour is often unexpectedly interrupted, by the remiſſion or diminiſhed force of pains for a conſiderable interval; by the conſtriction of the vagina after the os tincæ is completely dilated; or, by the rigidity of the external parts, though no obſtacle ſhould occur

from

from any defect in the conſtruction of the pelvis.

In ſome inſtances, the progreſs is retarded by the early rupture of the membranes, ſlow dilatation of the os tincæ, feebleneſs of the throes, and a variety of other cauſes. Nothing can therefore be more difficult, than to aſcertain, or gueſs at, the time neceſſary to accompliſh the wiſhed-for event. The more ordinary limits of a natural eaſy labour are from ſix to twelve hours; it is, however, ſometimes completed within two hours, and ſometimes requires ſeveral days. But the firſt labour is generally, from obvious cauſes, the moſt painful and tedious.

§ 2. *Diviſion of Labours.*

THE ancients, as far as can be collected from their writings, divided labours into two kinds; Natural, and Preternatural. The firſt included head, or, according to ſome, head and breech, preſentations; and all others were implied in the latter. Dead children

children ſeem to make a third diſtinction, and are directed to be delivered in a particular manner by ſharp hooks.

In different authors we find different arrangements, and the claſſification is ſtill arbitrary. That of Dr SMELLIE appears to be leaſt liable to exception. He refers all labours to three general claſſes: 1*ſt*, Natural; 2*dly*, Laborious; and, 3*dly*, Preternatural. He calls thoſe caſes *natural*, where the head preſents, and the child is expelled by the natural pains; *laborious*, when the head preſents, but the birth is uncommonly protracted, or requires the interpoſition of art; and *preternatural*, when any other part but the head firſt preſents, or when the feet are delivered before the head.

A great variety of diviſions and ſubdiviſions, however, ſtill prevails among modern practitioners; as, Natural and Non-natural, Slow and Lingering, Difficult and Laborious, Preternatural, Wrong and Croſs Poſitions, Perilous, Mixed and Complicated Labours, &c.; and different explanations have been given by different authors to the ſame

ſame terms. Such indefinite diſtinctions ſerve to involve the ſubject in obſcurity, and to miſlead and embarraſs inexperienced practitioners.

All diſtinctions ought to be reſtricted to thoſe caſes merely which require a different mode of practice. With this view, labours may with propriety be referred to Dr SMELLIE's general diviſion of three claſſes; Natural, Laborious, and Preternatural: And each of theſe may be ſubdivided into two or more different claſſes; which alſo comprehend a conſiderable variety of particular caſes.

I. NATURAL include,
  1. Expeditious and eaſy,
  2. Tideous and lingering, labours.

II. DIFFICULT or ſtrictly laborious labours comprehend,
  1. Thoſe caſes where the HAND alone is ſufficient to afford the neceſſary aſſiſtance,
  2. Where INSTRUMENTS muſt be uſed.

III. Preter-

III. Preternatural parturition comprehends,

1. Feet and breech cafes.
2. Crofs births.
3. One or both of the fuperior extremities protruded before the head.
4. All other cafes that require the child to be turned; as floodings, prolapfed cord, &c.

§ 3. *Management of Labours.*

IN all labours, three diftinct periods, or ftages, may be marked.

1. The dilatation of the orificium uteri.
2. The delivery of the child.
3. The feparation and expulfion of the placenta and fecundines.

Of thefe the firft is by much the moft tedious, and the management is nearly the fame in all labours: for, whatever time may be neceffary to accomplifh it, this firft ftage fhould, in every inftance, be trufted to nature; dangerous floodings,

(very rarely local defects in the soft parts) only excepted.

The third stage seldom requires much assistance from art.

In the second stage chiefly, a variety of management in different circumstances becomes necessary.

We shall first give a few directions for the treatment of Natural Labour in its three several stages; and then concisely direct the variety of management in the particular Cases of the other Classes.

CHAP.

CHAP. I.

Method of Treating NATURAL LABOURS.

SECTION I.

Expeditious and Easy Labours.

FIRST STAGE.

DILATATION *of the* ORIFICIUM UTERI.

ON the commencement of labour, and previous to any attempt to aſſiſt it, the neceſſary apparatus ſhould be prepared. The room ſhould be lofty, the bed equally diſtant from a confined ſituation, and a current of air; the curtains, and every part of the furniture, ſhould be thin, and

incapable of retaining either moiſture or ſmell. The coverings of the ſheets ſhould be carefully adapted to prevent the blood, or the waters, from penetrating through them.

The patient ſhould be permitted to walk, or reſt in her uſual poſtures, till the os uteri is dilated, and the pains be frequent and preſſing: ſhe ſhould then be placed on her ſide, with her knees drawn up; and, in advanced labour, they may be ſeparated by a pillow, and a reſiſtance given to the feet by an aſſiſtant. Before ſhe is placed in this poſition, every indelicacy, by frequent touching, is highly improper. It is afterwards more eſſential, and ſhould never be neglected immediately after the rupture of the membranes; for the child's arm, or any portion of the umbilical cord which may threaten to preſent, may then be replaced with eaſe.

Having obtained every cauſe which may impede labour, and guarded againſt every thing which may diſturb or irritate the patient, we ſhould wait with patience till

nature

nature has protruded the head of the child, or the membranes filled with their fluid. If we interpose before, it should only be to apply a warm cloth to the os externum, or a pressure to the loins, if the pains are violent.

The first stage of labour is then accomplished.

SECOND STAGE.

DELIVERY *of the* CHILD.

IF the membranes have not been before ruptured, it should now be done by the finger of the Accoucheur; and a remission of pain generally ensues. It returns, however, as soon as the watery fluid is discharged; and the perinæum is soon after distended by the pressure of the vertex: but, under proper management, no bad consequences follow from the distention, unless the labour is rapid or tedious. In the former case, the parts of the mother have been lacerated; and, in the latter, violently inflamed, in consequence of the

long-continued preſſure of the child's head.

When the parts are violently ſtretched, the perinæum may be gently ſupported during a pain, and a counter-preſſure is generally recommended when the labour is rapid; but it ſhould be remembered, that this ſupport is only uſeful as it retards the labour, which is often inconvenient, and ſometimes dangerous. A laceration of the perinæum is a very rare occurrence, and generally the conſequence of previous diſeaſe. It is therefore doubtful, how far a hazardous expedient is to be recommended to obviate an uncertain accident.

After the head is delivered, there is ſeldom any danger: the ſhoulders accommodate themſelves to the paſſage; and the birth may then be ſafely facilitated by the hands of the Operator, if any aſſiſtance ſhould happen to be neceſſary.

The child ſhould be immediately removed, as far as the cord will permit; if it is twiſted about the neck, body, or limbs, it muſt be diſengaged; and, after the child has ſhown ſigns of life, the cord muſt be tied.

tied. If the child has suffered from the compression of the head, the stringmay be safely suffered to bleed a little; or, if it appears to have been lately dead, the usual stimuli should be employed *.

THIRD STAGE; OR,

Separation and expulsion of the PLACENTA *and* SECUNDINES.

MANAGEMENT OF THE PLACENTA.

HAVING given the child to the nurse or one of the attendants, the next object of our regard is, the Management of the Placenta.

The same powers which expel the fœtus, are again, after a short interval, renewed, but in a lesser degree, to exclude the secundines. Their structure is, however, different from the more solid mass of the fœtus. The uterus sometimes contracts unequally; the os tincæ is more irritable

 than

* For a more minute detail of the apparatus of the bed, dress of the patient, and other particulars relating to the Management of Natural Labours, see *Treatise of Midwifery for the use of Female Practitioners.*

than the fundus; and the mufcular fibres round the edge of the orifice fometimes contract fo quickly, that the aperture foon diminifhes, and may for a little time prevent the cake from paffing after its adhefion to the uterus is diffolved. From the unequal or partial contraction of the mufcular fibres of the uterus where the placenta is attached, one portion may be feparated before another: all which render a variety of management, in peculiar circumftances, neceffary.

Hence the oppofition of fentiment of authors on the fubject; fome recommending as a general rule, to precipitate the extraction immediately after the delivery of the child, left the uterus fuddenly clofing, fhould render the operation difficult and hazardous; while others advife, in all cafes to truft the management entirely to nature. The middle courfe is, in general, the moft fafe and proper; and both extremes fhould be equally guarded againft.

As the feparation is accomplifhed by the fpontaneous contraction of the uterus, more

or less time will be necessary, according to the previous state of gestation, duration and management of the preceding part of labour, condition of the woman immediately after, and a variety of other occasional causes which may impede or promote the action of the uterus.

In most cases, the adhesion is dissolved within half or three-fourths of an hour after the birth of the child. The contraction of the uterus is most expeditious, and of consequence the placenta most easily and quickly separated, after a first pregnancy, when the woman is in good health, and when the labour has been properly managed. The contraction of the uterus is more slow and imperfect, and consequently the adhesion of the cake more tenacious, in premature births, when the woman's health is impaired from previous indisposition; in cases of tedious and difficult labours,—of languor or faintness after delivery,—and when hasty attempts have been officiously employed to force the extraction.

The diminifhed bulk, and fhifting of the abdominal tumor, which may be felt by the application of the hand externally, afford the beft means of information *when* to attempt expeding the expulfion of the fecundines; and, in general, enable us to judge whether any other child be retained *in utero.*

The approach of the birth of the placenta is commonly announced by the difcharge of fome clotted blood, and by a flight degree of uterine nifus, called by the women *grinding* or *griping pains*. Then is the time to affift the expulfion; which ought to be performed in this manner.

The cord muft be twifted round the fingers of the left-hand, fo that a firm hold is obtained; two fingers and the thumb of the right-hand fhould alfo be applied, to grafp the cord within the vagina. The advantage of a pain, when it occurs, fhould always be taken. The cord muft be pulled from fide to fide, and backwards towards the perinæum, endeavouring to drag in fuch a direction as to bring the central

part

part of the cake through the axis of the uterus and pelvis, and desiring the woman to employ her own exertions moderately by bringing a deep inspiration and bearing down gently; but, violent efforts of coughing, retching, sneezing, or straining, should be constantly avoided, lest dangerous floodings or deliqua might follow. It is known to advance, by the lengthening of the cord, and the straining of the woman. When the bulky part of the mass arrives at the os tincæ, the inverted cake, pressing against the orifice in a globular form, sometimes gives considerable resistance. This obstacle may be removed, either by passing up two fingers of the right-hand, guided by the cord, to bring down the edge; or by waiting a few minutes, then pulling gently at the cord with the left-hand, and pressing on the substance of the cake with the fingers of the right, higher and higher till the edge can be brought down, which must be grasped firmly, the funis being still extended with the other hand. The whole substance of

the cake, with the membranes, being at laſt entirely diſengaged, are to be gradually extracted, put into a baſon, and removed.

But, if the placenta does not advance when the cord is fully extended, and the woman ſuffers conſiderable pain, the operator muſt immediately deſiſt; leſt, by carrying the attempt further, floodings might be occaſioned, the cord be ruptured, or the uterus inverted. A ſoft warm cloth ſhould then be applied to the os externum, and the patient allowed to reſt for five minutes. If it does not yet advance, ten or fifteen minutes more ſhould be waited for; and, in the interval, a moderate degree of preſſure on the abdomen, in different directions, may promote the contraction of the uterus, and aſſiſt the ſeparation. By gradually proceeding in this manner, and patiently waiting for the contraction of the uterus, the placenta will be produced ſo low, that the centre can be felt, the edge brought down, and the extraction ſafely accompliſhed.

The

The *introduction of the hand* into the uterus to separate the adhesion, or assist the expulsion of the after-birth, is not perhaps absolutely necessary in one of several hundred cases. However cautiously performed, it occasions a considerable degree of pain; the very apprehension of an expedient so harsh and unnatural, inspires the utmost dread and horror, and not unfrequently causes deliquia or fits. It is cruel and barbarous to employ a painful mode of assistance, it is criminal to hazard the consequence of violence, where the same end may be obtained by gentle means, perhaps by waiting an hour or two extraordinary. In every view, the operation of introducing the hand to remove the placenta should only be employed in the most urgent cases.

It must, however, be acknowledged, that the placenta cannot always be removed by pulling at the cord. It may be ruptured: A profuse flooding indicates the necessity of the immediate interposition of the artist; for while he deliberates, the patient may sink:

ſink: the uterus may be ſpaſmodically conſtricted over or upon the cake, and prevent its advancing: or, The cake may be retained from extraordinary or morbid adheſion to the uterus. We ſhall conſider each of theſe caſes ſeparately.

1. *Method of removing the Placenta when the Cord is ruptured.*

The cord may be torn by the careleſſneſs of the operator, from its feebleneſs in premature births, or from its putrid ſtate when the child has been ſome time dead. In the laſt caſes, the rope is never to be truſted. Time ſhould be given for the cakes to be diſengaged and forced downwards; and the cord ſhould only be uſed for a guide, to conduct the fingers to preſs on the placentary maſs, in the manner directed, when it is advanced as far as the os tincæ.

When there is no rope for a direction to the hand, and it appears neceſſary to remove the

the placenta on account of the apprehenſion or anxiety of the woman, or any threatening ſymptom of danger, the hand muſt be gently inſinuated into the uterus, and the ragged membranes round the edge of the placenta ſearched for. If it cannot be diſengaged by bringing down the edge, let the hand be conveyed to the thick protruded centre; and by ſpreading out the fingers, then bringing them together ſo as to graſp the cake in the palm of the hand, and repeating the attempt again and again, the ſtimulus of the hand will promote the contraction of the uterus. The cake being at length entirely detached, is to be cautiouſly and gradually brought down, and removed.

2. *Method of extracting the Placenta in Caſes of Flooding.*

A PROFUSE hæmorrhagy ſupervening the delivery of the child, is alarming and dangerous; if it does not ſoon ceaſe, fatal ſyncope will probably enſue. Though it

it ſeem to abate, if the woman be low and faint, the relief may be fallacious; and is perhaps occaſioned by part of the placenta forced down at the cervix uteri, and by plugging up the orifice prevents the effuſion externally.

The conſequences to be dreaded can only be prevented by removing the placenta; for, while one portion adheres and another is detached, there is little chance that the flooding will ſtop till the uterus be put into a condition for contracting. The hand of the operator is to be gradually, but with a certain degree of courage and reſolution, introduced into the uterus, taking the navel-ſtring for a guide, and gathering the fingers together in a conical manner. If the placenta ſeems attached to the oppoſite ſide, the hand already introduced muſt be withdrawn, and the other paſſed in its ſtead; or if, from its adheſion towards the upper part of the womb, it appears to be without the reach of the hand, the poſition of the woman muſt be altered, and ſhe muſt be ſhifted from one ſide to the other, from the ſide

ſide to the back, croſs the bed, or placed on her knees and elbows, according to the particular circumſtances of the caſe.

The placenta, by its firmneſs, can be readily diſtinguiſhed from looſe clots of blood; and, from the womb, by its ſoftneſs and want of feeling. It may be diſengaged by inſinuating the fingers between it and the womb, through the membranes, when the ſeparated edge of the cake can eaſily be come at. If it cannot, the thick middle part of the placentary maſs ſhould be graſped firmly, ſpreading out the fingers and gathering them together upon it, and in that manner gradually endeavouring to diſengage and bring it away. It is dangerous to ſtrip or peel it from the womb, by placing the fingers on the outſide of the membranes, as authors generally adviſe; for, by that means, where the womb has loſt its contractile power, a fatal deluge may be occaſioned.

3. *Management of the Placenta in Cafes of Spafmodic Contraction of the Uterus.*

LITTLE hazard is to be dreaded from this caufe of retention; as by waiting for fome time, perhaps feveral hours or longer, the fpafm will be removed, the equal contraction of the uterus reftored, and the placenta by the fuccefsful efforts of nature be difengaged and expelled.

Though it might perhaps be the fafeft practice, both in this cafe and when the cord is torn, to delay the interpofition of manual affiftance even for a day or two, when the cake will probably be expelled in time of fleep, foon after waking, or forced off during the effort of paffing urine; *yet there is always hazard of leaving the woman before the after-birth is delivered.* She may fuffer from anxiety and agitation; or a flooding from partial feperation may enfue, and life itfelf be quickly extinguifhed.

If the operator cannot ftay conftantly with the patient, nor any affiftant be procured,

cured, the best practice is to give a full dose of opium, as 40 or 50 gtts L. L.; and when she is composed, and begins to be drowsy, if the cake cannot be brought away by pulling at the cord, and uterine efforts are in vain waited for, the hand of the operator may then be introduced into the uterus in a conical manner, and the constriction gently and gradually be overcome. The cake will probably be found mostly loose and disengaged, which must be firmly grasped in the hand and removed.

4. *Management in Cases of morbid Adhesion of the Cake.*

The placenta is liable to become diseased. It sometimes partially or wholly degenerates into hydatides, becomes scirrhous, cartilaginous, more rarely bony. Either of these states is probably originally preceded with some degree of inflammation; in consequence of which the intermediate connecting membrane between the

the cake and the uterus is deſtroyed, and a coalition formed between them.

Of all the cauſes of retention, this is the moſt difficult and dangerous. The caſe is intricate and perplexing. If the placenta remains, and nature fails to expel it, the woman generally dies from uterine inflammation and gangrene. She is often alſo the unhappy victim of the unſucceſsful attempt of the operator: for the uterus has been torn by the officious or unſkilful efforts of the practitioner; or mortal floodings, inflammation, or gangrene have enſued.

If, in theſe circumſtances, we ſhould wait for the natural expulſion, the woman may be quickly deſtroyed by flooding, from partial ſeparation. If we attempt to force a ſeparation of the adheſion, by tearing the placenta from the uterus with the fingers while that organ is in a ſtate of atony, a fatal deluge from the deſtruction of vaſcular ſubſtance may enſue before the hand could be withdrawn from the uterus.

The best and safest practice, in these alarming cases, is to defer our attempts as long as possible: then, but before the putrid process commences, to insinuate the hand with the utmost caution and tenderness; attentively examine the cake, by feeling every part of its substance; carefully avoid tearing by force at that place where the diseased hardness or scirrhosity is; separate cautiously that portion which is loose and soft, and which yields to gentle efforts: the rest must be left to nature; to be expelled with the cleansings, or destroyed and discharged by means of suppuration.

Upon the whole, it is hazardous to precipitate the delivery of the placenta, or to trust in alarming or difficult cases the imperfect efforts or *limited powers of nature.* From over hasty or violent attempts to force the extraction, the most dreadful accidents, as inflammation, laceration, or inversions of the uterus, and mortal hæmorrhagies, frequently happen. From the retention of the secundines, malignant, putrid, or

miliary fevers, and fatal floodings, have often alſo been occaſioned *; of which I have known ſeveral inſtances.

SECTION II.

Tedious and Lingering Labour.

A Labour, though ſtrictly natural with reſpect to the poſition of the child, the management, and termination, may be tedious and lingering in the progreſs or duration of its different ſtages. This is exceedingly diſtreſſing to the patient, perplexing and vexatious to the practitioner.

When the labour is protracted beyond the more uſual limits, the woman becomes anxious and dejected; the pains occaſionally remit and recur with frequency and violence, or alternate with imperfect and irre-

* *Vide* Mr White's valuable treatiſe, Directions for Managing the Placenta, particularly Caſes 11th, 12th, 13th, 14th, and 15th; and Mr Kirkland's Treatiſe of Child-bed Fevers, particularly p. 158—164.

irregular intervals of eaſe; the progreſs is ſlow and imperceptible; her ſpirits are exhauſted from reſtleſſneſs and apprehenſion, or while the pains abate ſhe inſenſibly falls into ſhort but unrefreſhing ſlumbers. After a long and obſtinate conflict, by the reiterated ſucceſſion of feeble efforts, the head of the fœtus moulds itſelf to the paſſage; the cranial bones are compreſſed; the vertex lengthens out, forming a ſoft conical tumor; the reſiſting yield to the propelling powers; and the birth, after perhaps a period of two or three complete days, is at laſt, however, ſafely accompliſhed.

The cauſes of lingering labour may be referred to the following.

I. In the Mother.

1. Any defect, more immediately in the action of the uterus, or auxiliary powers of parturition, which impedes the force of the labour-pains.

2. More remotely, univerſal debility, from

   a. Flooding, diarrhœa, or other debilitating evacuations.

   b. Epileptic fits.

   c. Crampiſh ſpaſms.

   d. Sickneſs, lowneſs, and faintneſs.

   e. Fever, from inflammatory diatheſis, or improper management.

   f. Sudden or violent emotions of the mind.

3. Local impediments interrupting the paſſage of the child; as,

   1. In the bones affecting the dimenſions of the pelvis.

   2. In the ſoft parts; as,

      a. Conſtriction or rigidity of the os tincæ.

      b. ——————— of the vagina and os externum.

      c. Scirrhous or polypous tumors.

d. Tume-

d. Tumefaction from hardened fæces in the rectum.

e. Stone in the urethra.

f. Distention of the bladder from urine.

g. Prolapsus of the uterus, vagina, or rectum.

II. In the CHILD; as,

1. The bulk and unusually complete ossification of the head, or
2. Its unfavourable position.
3. The bulk or improper descent of the shoulders.

III. From the SECUNDINES and WATER; as,

1. The rigidity or weakness of the membranes.
2. An excess or deficiency of the liquor amnii.
3. The length or shortness of the cord.
4. The improper attachment of the placenta.

As theſe cauſes exiſt ſingly or combined, the labour will be leſs or more difficult and painful.

Moſt of the obſtacles now mentioned are to be ſurmounted by patience and perſeverance. If the labour is otherwiſe natural, though from peculiarity of habit and a variety of particular circumſtances it ſhould prove tedious, the ſafeſt and beſt practice, in general, both for mother and child, is to truſt the management *wholly to nature.*

The difficulty is frequently owing merely to the reſiſtance of the ſoft parts; hence ſtrong robuſt women ſuffer more than the nervous and delicate. In the former, the part are tenſe and rigid, and ſtretch ſlowly. In the latter, they are more relaxed, ſoft, and yielding. The firſt require the cooling, ſedative plan; the latter, light nouriſhing food, in ſmall quantities, often repeated, with the moderate uſe of cordials and anodynes. In either caſe, tranquillity ſhould be promoted, by keeping the

the patient quiet and eaſy; by conſtantly avoiding fatigue, buſtle, and noiſe; at the ſame time ſoothing and comforting her with the beſt aſſurance of a happy delivery.

We ſhall conciſely treat of theſe ſeveral cauſes.

I. In the MOTHER.

1. Any defect in the action of the uterus itſelf conſidered as a muſcular organ, or of the auxiliary powers of parturition, impairs the force of the labour-throes; or, in other words, renders the pains feeble and trifling.

The over-diſtention of the uterus impairs the action of its muſcular fibres, and may for ſome time prevent thoſe ſpaſmodic efforts by which the os tincæ is opened and the fœtus expelled; there may be alſo other cauſes of torpor, or want of irritability, of which we are ignorant. Exceſſive diſtention of the uterine fibres can

only, however, have a temporary effect to retard the labour; and it is little in our power to obviate the defect, till the membranes can be ruptured and the water evacuated: the uterus then coming in close contact with the body of the fœtus, the head will begin to press against the orifice, and the pains become strong and forcing.

But, as many inconveniences are known to ensue from an early discharge of the waters, that expedient should be the result of the most cautious and deliberate reflection; and should never be had recourse to till the orifice be sufficiently dilated. Any defect in the auxiliary powers will produce the same effect in a lesser degree: For, since the whole system of muscular parts is employed in the action of parturition, in proportion as any of these are impaired or weakened, the exertions of labour will be less strong or forcing. But particularly, whatever affects the diaphragm and muscles concerned in respiration, will materially impede or interrupt the action of partu-

parturition. A narrow cheſt, difficult reſpiration from whatever cauſe, hydrops aſcites, &c. have a conſiderable influence on delivery.

The treatment of all theſe variety of caſes muſt be directed with a view to remove, or obviate, the cauſes of interruption as much as poſſible.

2. More remotely, the progreſs of labour may be interrupted by debility, from

a. FLOODING.—Though flooding, in advanced geſtation, is always alarming and dangerous, it is leſs hazardous when it occurs along with labour-pains: for by proper management the hæmorrhagy may generally be checked, till the pains become ſtrong and regular; it afterwards uſually ſtops or abates, and the delivery terminates favourably. But, if the flooding proceeds from the attachment of the placenta at the cervix or over the orificium uteri, which can readily be known by a careful examination from touching, the caſe

case is highly alarming, the danger imminent, and the event to be dreaded can only be prevented by an expeditious delivery.

Diarrhœa—when excessive, exhausts the patient, brings on debility, and diminishes the force of the labour-pains. Warm-water glysters to wash out the rectum, and opiates, are the best palliative remedies. The strength must be kept up by proper nourishment, as beef-tea with rice, hartshorn gellies, &c. and the moderate use of cordials.

b. Epileptic Fits—when so violent or frequently repeated as to leave the patient in a state of stupor and insensibility, retard labour, and endanger the lives of both parent and child. If the fœtus should not be expelled by a few paroxysms,—if symptoms are threatening, and the child is within reach of the forceps, delivery should be effected as soon as possible. But any violent exertions to procure delivery, by forcibly stretching the parts and counter-

acting

acting nature, with a view to turn the child, as many advise, is impracticable with any probability of success. In every instance it ought to be a rule, to wait till the head of the fœtus is sufficiently protruded, that the access may be easy to apply the forceps.

c. Crampish Spasms—are generally confined to the thighs and legs, more rarely the belly is affected. They proceed from the pressure of the child's head on the nerves as it advances through the pelvis, and can only be removed by delivery. But as the pains are seldom attended with danger, few cases occur to render the assistance of art necessary, except by breaking the membranes, which often relieves the pains when excessive. Venæsection, glysters, and opiates, may be occasionally employed as palliatives, when the belly is the seat of the disease.

d. Sickness, Lowness, and Faintness—often occur, and have also a considerable

ſiderable influence in retarding the termination of labour. They happen chiefly to women of weak nerves, or others whoſe health has been impaired from previous ſickneſs or miſmanagement; and accompany the firſt part of labour only. In its progreſs, the woman acquires freſh vigour and additional reſolution; the pains become ſtrong and forcing; the delivery, even where the patient appears to be weak and exhauſted, often has a ſafe termination, though ſeveral days ſhould be neceſſary to accompliſh it; and the recovery is as favourable as if the whole management had been regulated by the wiſhes of the attendants *.

In caſes of lowneſs and depreſſion, the great object to be aimed at is to gain time, to ſupport the patient's ſtrength and ſpirits, to guard againſt putting her on labour

* I have attended a patient three days and nights, and one whole fourth day, without danger: the woman crooked, and the child large. She lived all the time on tea and gruel only. *Dr Hunter's MS. Lectures on the Gravid Uterus, article* Difficult Labours.

bour too early, and to use every means for reserving her strength and resolution. When the pains are slow and trifling, when she is restless, anxious, and dejected, opiates often produce the happiest effects; they remove grinding fruitless pains, recruit the spirits, and amuse the patient during the tedious and painful time. We can scarcely aim at more; for, though the dilatation of the uterus, and progressive steps of the labour, advance by slow degrees, under proper management, and while no alarming symptoms occur, no danger from delay is ever to be dreaded.

e. FEVER, *from inflammatory Diathesis, or improper Management.*—Inflammatory diathesis in young subjects of strong rigid fibres and plethoric habits, must be obviated by venæsection, repeated glysters, and cooling regimen. The management must be otherwise regulated by particular circumstances.

f. EMOTIONS *of the* MIND. Every kind of information or intelligence in which the patient, her family or relations, are nearly interefted, fhould be carefully concealed. Their effects in difturbing the woman, occafioning flutter, agitation, and their confequences, are too well known to require any further cautions concerning them.

3. Local impediments interrupting the paffage of the child; as,

(1.) *In the Bones, affecting the Dimenfions of the Pelvis.*—Narrownefs from diftortion of the bones can readily be difcovered when the defect is confined to the outlet. But when the brim is faulty, and the woman in other refpects tolerably well proportioned, we can only judge from the effects. If the progrefs of the labour be flow and tedious—if, from the general figure and conftruction of the woman's body, there fhould be reafon to fufpect a faulty pelvis;—if the fpine be twifted, the legs crooked, the

the breaſt bone raiſed, or the cheſt narrow;—ſuch conſtitutions, independent of any defect in the baſon, require a particular management; they cannot ſuffer much confinement to bed, on account of their breathing; nor give much aſſiſtance to the pain by their own exertions.

Diſtortions of the brim are more difficult to diſcover; but we can diſtinctly feel any material defect in the ſhape of the ſacrum and coccyx, in the poſition of the iſchia or diſtance between them, and any deviation on the arch of the pubes. Where the diſtortion is ſo general that the whole cavity of the pelvis is affected, the ſhape of the body, the ſlow progreſs of the labour, and the ſtate of the parts to the touch, afford ſufficient information. In either caſe, after the firſt ſtage of labour, narrowneſs of the pelvis can be known from the ſymptoms; though it is difficult, and almoſt impoſſible, to aſcertain the degree of deviation with mathematical accuracy. The hand cannot be introduced while the paſſage is obſtructed with the head of the

fœtus; the pelvimeter of Monſieur Coutouly, or graduated probe recommended by others for meaſuring the pelvis, are leſs to be truſted *. In one word, we are to judge of the narrowneſs, from the fruitleſs efforts of coercive throes after the uterus is ſufficiently dilated,—from the head of the fœtus advancing in a conical form, with the cranial bones overlapped, giving a ſharp feel to the touch like a ſow's back †; and of the degree of diſtortion by practical knowledge.

A ſlight diminution of capacity will be overcome by the gradual compreſſion of the bones of the cranium: but, if the diſtortion be conſiderable, the child's head large, or unuſually well oſſified, and remains obſtinately wedged in the pelvis; if the woman's ſtrength is impaired, along with ſwelling of the parts, ſuppreſſion of urine,

* See the method of examination by the fingers and hand to detect narrow pelvis, as directed by Dr Wallace Johnſton, *Syſtem of Midwifery*, 4to, p. 288, to p. 291.

† See Dr Smellie's Tables, Pl. xxvii. & xxviii.

urine, &c. in these circumstances it would be dangerous to delay the proper means of affording assistance, as both mother and child might become the victims of neglect or mismanagement. We should be aware, however, of being imposed on, either from the anxiety of the distressed patient, or by the noisy clamours of impertinent attendants. It must be remembered, that the gentlest assistance our hands, or instruments, in laborious births can procure, is always attended with some degree of hazard: that if instruments be employed too early, that is, improperly, nature will be interrupted; and, from the bruises by the force of pulling, from the resistence to the mechanical power applied, or from the instrument losing its hold, the most fatal consequences may ensue.—On the contrary, if artificial assistance be too long deferred, the strength of the patient being exhausted, she may die undelivered; sink during the operation, or soon after. But, mechanical exertions to force delivery, where in time nature unassisted

might accomplish the task, has, in fact, proved more fatal than the latter. To draw the line of distinction between Lingering and strictly Laborious Labour, is exceedingly difficult, or to determine the critical time of interference. It is, however, an object highly interesting:—the honour of the profession,—the credit of the practitioner,—the important lives of a worthy mother and her progeny, depend on it; and the Accoucheur is culpable for his neglect or misconduct.

(2.) *In the Soft Parts*; as,

a. *Constriction or Rigidity of the cervix or Orificium Uteri.*—This is one of the most common causes of lingering labours; it chiefly occurs in elderly women, in strong robust constitutions, or where the intervals between child-bearing have been distant. If the orificium uteri, instead of kindly opening with the pains, and becoming thin, soft, and dilatable, should form a thick ring or flap, stretch slowly, and

and the pains are frequent, but unprofitable, a tedious labour may be expected. Warm glysters, injections of warm oil into the vagina, and the vapours of warm water, after the waters have passed, are the only means of relief; for it is difficult and dangerous to stretch the mouth of the womb with the fingers. But, though the labour be lingering, if we have only patience to wait on nature, we shall generally find her efforts sufficient: for, in a first labour, or when the woman is advanced in life, and the parts are dry and rigid, from 36 hours till three days may be required for the dilatation of the orifice of the womb; yet if the management be properly regulated, neither the mother nor the child will be in danger, and the mother's recovery will perhaps go on as favourably as if the delivery had been accomplished in a few hours.

b. *Constriction or Rigidity of the Vagina and Os Externum.*—The disadvantage of these contractions in the soft parts chiefly is,

that the head of the child is detained for ſome time from advancing without the os externum, after it has paſſed through the bony cavity. But the child ſeldom ſuffers; and, when in hazard, can ſeldom be ſaved without injuring the mother. Warm fomentations to ſoften the parts, not to heat the body, may in theſe caſes be uſed, and oil or pomatum be applied: but it is of the greateſt conſequence that the parts ſhould ſtretch ſlowly; ſo that we ought not to haſten the ſtretching by any manual application.

c. *Scirrhous or Polypous Tumors.*—There is ſeldom occaſion, in caſe of cicatrices about the os tincæ or vagina, to dilate with the ſcalpel, to remove polypous tumors by exciſion, or to cut upon and extract a ſtone from the urethra in time of labour. But if circumſtances are urgent, ſuch expedients are ſafe and practicable, and warranted by many precedents.

From previous ulceration, or laceration

of the os uteri and vagina, disagreeable constrictions happen: but they are frequently overcome in time of labour. There are many well attested instances, where, at the commencement of labour, it was utterly impossible to pass a finger within the contracted orifice of the vagina; yet the parts dilated as labour increased, and the delivery terminated happily. In some cases, the dilatation begins during pregnancy, and is completed in time of labour.

d. *Tumefaction from hardened Fæces*—frequently proves an obstacle to labour; for the contents of the gut form a large tumor, which can be readily felt from the vagina, and diminishes its cavity. This tumor has been sometimes mistaken for the child's head; but the mistake is soon discovered by a skilful practitioner, for it is removed by frequent glysters.

e. *Stone in the Urethra.*—In those women subject to gravelish complaints, a bit of stone

ſtone thruſt forwards, by the force of labour, from the neck of the bladder into the urinary paſſage, will occaſion difficulty, pain, or ſuppreſſion of urine; and may, if not removed, prove an inſurmountable obſtacle to the progreſs of labour. If it cannot be eaſily puſhed back by introducing the catheter, a ſurgical operation muſt be had recourſe to.

f. *Diſtention of the Bladder with Urine*—in ſlow labours, frequently occurs, and is a dangerous circumſtance. It ſhould be early guarded againſt by abſtinence from drink; and removed by evacuating the urine, gently preſſing back the child's head with the fingers when the introduction of the catheter is difficult.

g. *Prolapſus of the Uterus, Vagina, and Rectum.*—In a pelvis too wide in its dimenſions, the *womb* at full time may deſcend into the vagina by the force of the throes of labour; though ſuch caſes very rarely occur. The only treatment is to ſupport

the

the womb well by preſſure with the hand in time of the pain, that the ſtretching of the parts may be gradual.

The *vagina*, in weakly women, often prolapſes in time of labour, and is protruded before the child's head by the force of the pains. If this happens, it muſt be replaced in the abſence of the pain, by gentle preſſure with the fingers introduced in a proper manner and direction, and its return afterwards prevented.

Prolapſus of the *Gut*—muſt be treated in a ſimilar manner; its protruſion may be prevented by preſſure with a thick linen compreſs applied over the anus, and retained with the hand in time of the pain.

II. In the CHILD, the labour may be protracted from

1. *The Bulk and Oſſification of the Head.*—There may be either a natural diſproportion between the head and body, or the ſwelling may be occaſioned from a collection of wa-

ter in the head, or be the confequence of the child's death.

From the ftructure and make of the pelvis and head in a natural ftate, it is evident, that a head of a larger fize, having the bones foft and moveable, will pafs through the pelvis with lefs difficulty, and occafion lefs pain in the birth, than a fmaller head, having the bones more folid, and the futures more firmly connected. A large head may be fufpected, when the vertex does not lengthen out by the force of the pains (as it commonly does in lingering labours); when the progrefs of the labour is fufpended, though the pains continue to be ftrong and frequent, after the foft parts are fufficiently dilated; when the woman is in good health, and there is no other apparent caufe to account for the protraction.

When the fwelling proceeds from a collection of water in the child's head, it may be known by the head prefenting at the brim of the pelvis in a round bulky form, by the diftance between the bones of the head,

head, and by a foftnefs and fluctuation evident to the touch.

When the child has been long dead, the head and body often fwell to a great fize. This may be known from the hiftory of the cafe; from a particular puffy feel of the prefenting part of the child; from the difcharge of putrid waters, fometimes mixed with the meconium of the child; and from the feparation or peeling of the outer fkin of the head when touched: Though it may be here obferved, that the moft probable or fufpicious fymptoms of the child's death are often deceitful.

From whatever caufe the head is enlarged, if the difficulty arifes from that circumftance, and the force of the pains proves infufficient to pufh it forwards; if it has made no fenfible progrefs for feveral hours after the waters were difcharged and the os uteri is fully dilated; and if the pains fhould begin to remit or flacken, and the woman to be low, weak, or dejected; it will then be neceffary to have recourfe to the affiftance of art.

(2.) *The*

(2.) *The unfavourable Position of the Head.*—The head of the child may be squeezed into the pelvis in such a manner as not to admit of that compression necessary for its passing through the bony cavity.

Where the pelvis is well formed, and the head of an ordinary size, although it should present in the most awkward and unfavourable position, it will yet advance; and nature, under proper management, will, in most cases, safely accomplish the delivery. The labour will unavoidably be more painful and laborious; but, whatever time may be required, there is less hazard either of the mother or child, than if delivery had been hastened by the intrusion of officious art.

But if the woman be weak or exhausted, and the pains trifling; if the head of the child be large, the bones firm, and the sutures closely connected; or if there be any degree of narrowness in the pelvis; a difficult labour may be expected, and the life of both mother and child will depend on

on a well-timed and skilful application of the surgeon's hands.

The unfavourable position of the head may be referred to two kinds, which include a considerable variety.

1st, *When the Crown instead of the Vertex presents.*

2dly, *Face-Cases.*

First, *When the Fontanella, or Open of the Head, instead of the Vertex*, first presents to the touch, a more painful or tedious labour may be expected: for the head does not take the same mechanical turns in passing through the pelvis as in natural labour; the face either originally presents to the pubes, or takes that direction in passing. The bulky crown is forced within the brim of the pelvis with more difficulty; the progress of the labour is more slow and painful; and, when the head has advanced so far that the crown presses on the soft parts at the bottom of the pelvis, there is much greater hazard of the tear-

ing

ing of the perinæum, than when the lengthened-out vertex preſents: but, if no other obſtacle occurs, the labour, notwithſtanding, will, by proper management, generally end well; and much injury may be done by the intruſion of officious hands.

Secondly, *Face-Caſes.*

Of laborious births, face-caſes are the moſt difficult and troubleſome. From its length, roughneſs, and inequality, the face muſt occaſion greater pain; and, from the ſolidity of the bones, it muſt yield to the propelling force of labour throes with more difficulty than the ſmooth moveable bones of the cranium. Our ſucceſs in delivery in theſe caſes will chiefly depend on a prudent management, by carefully ſupporting the ſtrength of the woman.

The variety of face-caſes are known by the direction of the chin; for the face may preſent.

1*ſt*, With the chin to the pubes.

2*dly*, To the ſacrum.

3*dly*, and 4*thly*, To either ſide.

The rule in all theſe poſitions is, to allow the labour to go on till the face be protruded as low as poſſible.

It is often as difficult and hazardous to puſh back the child, and to bring down the crown or vertex, as to turn the child and deliver it by the feet.

Sometimes a ſkilful artiſt may ſucceed in his attempt to alter the poſition, when he has the management of the delivery from the beginning; or, in thoſe caſes where the face is conſiderably advanced in the pelvis, may be able to give aſſiſtance by paſſing a finger or two in the child's mouth and pulling down the jaw, which leſſens the bulk of the head; or, by preſſing on the chin, to bring it under the arch of the pubes, when the crown getting into the hollow of the ſacrum, the head will afterwards paſs eaſily. But, in general, FACE-CASES ſhould be truſted to nature; and interpoſition by the hand, or inſtruments, is ſeldom adviſable or even ſafe.

(3.) *The*

(3.) *The Bulk, or improper Deſcent of the Shoulders* through the pelvis, rarely proves the cauſe of protracted labour. The head is always pretty far advanced before any obſtruction can ariſe from this cauſe; and, if the head has already paſſed, in a pain or two the ſhoulders will follow. The ſame reaſoning will alſo apply with regard to the aperture of the uterus itſelf. If the head paſſes freely, in like manner will the ſhoulders: the os uteri rarely, if ever, is capable of contracting upon the neck of the child, and thus preventing the advance of the ſhoulders; and, ſhould this prove the caſe, what can we do but wait with patience? After the delivery of the head, if the woman falls into deliquia; or if, after ſeveral pains, the ſhoulders do not follow, and the child's life be in danger from delay; we ſhould naturally be induced to help it forward in the gentleſt manner we are able, by paſſing a finger on each ſide as far as the axilla, and thus gradually pulling along: or, if this method fails, the

ſhoulders may be diſengaged by preſſing on the ſcapula.

III. The third general cauſe of Tedious or Lingering Labour, ariſes from the PLACENTA, its Appendages, and the LIQUOR AMNII.

1. *The Membranes may be too ſtrong or too weak.*—From the former of theſe cauſes, the birth is, in ſome inſtances, rendered tedious; but, as the ſame effect is more frequently produced by the contrary, and the conſequences are much more troubleſome and dangerous, practitioners ſhould be exceedingly cautious of having recourſe to the common expedient of breaking them till there be a great probability that the difficulty proceeds from that circumſtance; and, even then, it ought not to be done till the parts be completely dilated, and the head of the child well advanced in the pelvis.

Many inconveniences enſue from a premature evacuation of the waters: for the parts then become dry and rigid: the dilatation

tation goes on more ſlowly; the pains often either remit, or become leſs ſtrong and forcing, although not leſs painful and fatiguing; the mouth of the womb which was previouſly thin and yielding, may be obſerved to contract, and to form a thick ring, for ſome time obſtinately reſiſting the force of the pains; the woman's ſtrength languiſhes, and her ſpirits are overcome and exhauſted; and, at laſt, the child's head becomes locked into the pelvis, merely from want of force of the pains to propel it.

An inconvenience of *too great rigidity* of the membranes is, that the child at full time may be protruded, incloſed in the complete membranous bag, ſurrounded with the waters. But ſuch inſtances ſeldom occur. When the whole ovum is thus protruded at once, there is hazard of flooding from the ſudden detachment of the placenta and membranes. It ſhould, therefore, be prevented by breaking the membranes, when they advance and ſpread out

at the os externum, and the head of the child follows in the ſame direction.

The method of breaking the membranes is, to pinch them between the finger and thumb; to puſh a finger againſt them in time of a pain; to run the ſtilet of a catheter through them; or, when there is little water protruded, and they are applied cloſe in contact with the child's head, they muſt be deſtroyed by ſcratching with the nail; but care ought to be taken leſt the ſcalp of the child's head, covered with mucus, ſhould be miſtaken for the membranes.

2. *The Waters may be too copious, or too ſparing.*—The firſt is inconvenient; for, by this means, the weight of the water gravitating to the under-part of the membranes in time of a pain, may burſt them too early, and occaſion the diſadvantages before-mentioned.

An extraordinary quantity of Water—may overſtretch the womb, and prevent or weaken the pains. Such a cauſe of protraction may be ſuſpected, if the firſt ſtage

of labour goes on very ſlowly, if the woman be very big-bellied, and if much time be ſpent before the head of the child becomes locked in the bones of the pelvis. In theſe circumſtances, if the pains ſhould ceaſe or become trifling, the membranes may be ruptured with ſafety and advantage.

Little or no Water—is ſometimes contained in the membranes. The parts, then, ſtretch with more difficulty and pain, and muſt be lubricated from time to time with butter or pomatum, in the manner mentioned under the article of *Rigidity of the ſoft Parts.*

3. *The Cord may be too ſhort, or too long.*—The extraordinary length of the cord, by forming folds round the child's neck or body, may prove the cauſe of protracted labour: but there is generally ſufficient length to admit of the birth of the child ſafely; and it is time enough, after the child is delivered, to ſlip the nooſe over the ſhoulders and head. After the head is protruded, the ſhoulders are ſeldom prevented

from

from advancing by folds of the cord round the neck; and it very rarely becomes necessary to pass a finger between the child's neck and the cord, in order to divide the cord, while the child is in the birth; a practice that may be attended with trouble and hazard.

Another inconvenience of the great length of the cord, though it may also proceed from the low attachment of the placenta, is,

The prolapsus or falling down of the Cord, doubled, before the Child's Head.—A circumstance which often proves fatal to the child; for, if it be not reduced by pushing it up within the uterus, beyond the bulky head of the child, and prevented from returning, with the fingers, till the head, by the force of the pain, descends into the pelvis, the circulation will soon stop from the pressure of the cord between the head and pelvis, and the child will infallibly perish. If this method of reducing the cord should fail, or if the pains be too quick and forcing to admit of the attempt,

a warm cloth ſhould be applied to the os externum over the cord, to cover it from the cold, and the natural pains ſhould be waited for; if the pains be very ſtrong and forcing, and the progreſs of labour quick, the child may yet be born alive. Some adviſe to preſerve the child, by turning and delivering by the feet; but it is, at beſt, a precarious expedient: for new difficulties may afterwards occur; the operation of turning is painful and hazardous; and it would be extremely criminal to expoſe the mother's life to danger, when there is no certainty of preſerving the child.

The navel-ſtring is, ſometimes, naturally thick and knotty; or thickened, and of conſequence ſhortened, by diſeaſe. If this happens, part of the placenta may be ſeparated as the child advances, and a flooding enſue; or, the ſtring may be actually ruptured, and occaſion the death of the child; but ſuch inſtances are very rare.

4. The fourth cauſe is, *The improper attachment of the Placenta over the Orifice of the Womb,*

Womb, and is a more dangerous circumſtance than any other; for, if the delivery be not ſpeedily accompliſhed, blood, from the ſeparation of the placenta, will pour out ſo profuſely, that the unfortunate woman will very quickly ſink under it. This unhappy event can be prevented by no other means but by an expeditious delivery. The alarming ſituation of the woman will be ſufficiently indicated by the appearance and rapid increaſe of flooding, and by the ſoft pappy feel of the after-birth to the touch. One half-hour's delay, or leſs, may in ſuch circumſtances prove fatal to the mother and the child; therefore the friends ſhould immediately be appriſed of the danger, and the earlieſt aſſiſtance be procured *.

Thus, in all labours merely lingering, the delivery, under proper management, will end favourably; the head, in the moſt awkward poſition, where the pelvis is to-

* See method of delivery in flooding caſes, claſs 4th of Preternatural Labours.

lerably well proportioned, will collapſe by preſſure; and, though the progreſs for ſome time may be ſlow and gradual, the termination of labour is often as ſafe for the child, and the recovery of the mother as expeditious, as if the birth were accompliſhed by a few pains.

CHAP.

CHAP II.

Of DIFFICULT *or ſtrictly* LABORIOUS LABOURS.

DIFFICULT or *ſtrictly* LABORIOUS *Labours*, are " thoſe in which *na-* " *ture* is unable to perform her office, and " requires the *active* aſſiſtance of an artiſt, " though the poſition of the child is na- " tural." They comprehend,

I. Thoſe caſes where the Hand alone is ſufficient for the purpoſe.

II. Where inſtruments muſt be uſed.

SECTION I.

Laborious Cases requiring the HAND *alone.*

THE HAND alone affords the necessary assistance in laborious parturition,

1. By turning the child, in alarming floodings, before the head is wedged in the pelvis. How this is to be performed will be explained under the chapter of *Preternatural Labours.*

2. By reducing the umbilical cord, when protruded before the head.—In the same situation, the child may be sometimes turned: but this is only to be attempted after every method to reduce the cord hath failed;—when there is a reasonable prospect of saving the child; and,—when *turning* can be practised with perfect safety to the mother.

3. By altering the position of the head in *face-cases*, with a view to bring down the smooth cranium; which should only be attempted when the face remains above the brim of the pelvis, with deficient or trifling

trifling pains, and the woman's life is in danger by floodings, convulsions, or from some other cause. More frequently assistance may be *then* given, by pulling down the jaw, with a finger or two introduced into the child's mouth, in order to bring the chin under the arch of the pubes, when the pains are insufficient to protrude the head in that position.

4. When one, more seldom both, of the superior extremities present along with the head. In these circumstances, the earliest opportunity that the state of the uterus will admit of should be taken, to pass the hand well lubricated, in a conical manner, in the absence of pain, through the vagina and os uteri; endeavour gently, but at the same time with courage and resolution, to thrust back the child's hand and arm above the presenting head, to retain there with the fingers till a pain comes on, by which the head will be forced into the pelvis, the return of the arm prevented, and the delivery will be afterwards safely and naturally accomplished.

But,

But, if the pains are ſtrong and frequent; if the head is already wedged in the pelvis; if the woman appears to be well formed, eſpecially if ſhe has formerly had children, and the labour was natural and eaſy; if the head advances with the pains, and the hand of the fœtus is cloſe preſſed between its head and the pelvis; in theſe particular circumſtances the delivery ſhould be truſted *wholly* to nature.

SECTION II.

INSTRUMENTAL *Delivery.*

INSTRUMENTAL Delivery is of four kinds:

I. Where the child is intended to be extracted without doing any injury to it or to the mother.

II. Where the fœtus muſt be deſtroyed by diminiſhing its bulk, with a view to preſerve the life of the mother.

III. Where

III. Where the *dimensions of the pelvis* are enlarged to procure a safe delivery to the child.

IV. The extraction of the fœtus by the Cæsarian Section.

---

§ 1. *CASES where the CHILD is intended to be extracted without INJURING IT or the MOTHER.*

THE mechanical expedients for this purpose are,

1. The Scoop, Lever, or single blade of the Forceps.

2. The Double Lever, or Two-bladed Modern Forceps.

I. The SCOOP, or SIMPLE LEVER—the boasted secret of the celebrated ROONHYSEN, is extremely limited in its uses.

It may be employed where a slight stimulus is sufficient to rouse the pains, or where little force is necessary to alter the position of the head, by introducing it in the same manner and with the same precautions

cautions as a blade of the forceps: either at the lateral parts of the pelvis, under the arch of the pubes, or diagonally. But as there is great hazard of bruiſing the parts of the mother, by the reſiſtance of the inſtrument, unleſs managed with ſo much dexterity that the hand of the operator is the fulcrum or ſupport on which its action turns; and, as it can only be uſed when the head it ſufficiently protruded for applying the forceps, which are preferable both for ſafety and ſucceſs; we conſider the *ſimple lever* as a dangerous expedient in the hands of a young practitioner.

II. The DOUBLE LEVER, or MODERN FORCEPS.

USE *of the* FORCEPS.

The forceps is an inſtrument intended to lay hold of the head of the child in laborious births, and to extract it as it preſents. This inſtument, as now improved, in the hands of a prudent and cautious operator, may be employed without doing the leaſt injury either to mother or child.

The forceps, since their original invention, have undergone several important improvements and alterations. Those of Mr Wallace Johnston, lately improved, seem preferable to every other. Sometimes the head, when high in the pelvis, may be extracted by a long pair, such as the long forceps of Dr SMELLIE, Mr PUGH, or Dr LEAK; but their application and powers are difficult and dangerous, and they can only be used with absolute safety in the hands of an expert practitioner *.

GENERAL RULES for using the FORCEPS.

1. The forceps should never be employed till the first stage of labour be completely accomplished; till the head of the child is protruded below the brim of the pelvis; and till, by the continued pressure of the head, the tumor of the perinæum is in some degree formed.

2. As the safety of the mother is our only

* See a figure of the improved forceps in Dr Smellie's Plates.

only apology for uſing inſtruments, the forceps ſhould never be employed but in the moſt urgent and neceſſitous caſes: as, for example, when the woman is much ſpent or exhauſted: when the parts are ſwelled, along with *ſuppreſſio urinæ*; when the pains are weak or trifling, or have ceaſed entirely, and are not likely to recur; or when ſhe is threatened with convulſions, floodings, or faintings.

3. The contents of the rectum and bladder ſhould be emptied in all caſes where inſtruments are employed to aſſiſt the delivery.

4. The poſition of the head ſhould be exactly known before attempting to apply the forceps.

5. The poſition of the woman muſt be regulated by the preſentation of the child's head. In the ſimpleſt and eaſieſt of the forceps caſes, when the head is ſo far advanced as to preſs conſiderably againſt the perinæum, and the ears are nearly lateral or diagonal, ſhe may be placed on her back or ſide, with her breech over the edge of the

the bed; but, when the head is higher in the pelvis, and the ears towards the pubes and sacrum, the side, with the knees drawn up to the belly, as in natural labour, is the most commodious position both for the patient and operator.

6. The parts of the woman must be gently stretched and well lubricated with the hand gradually introduced into the vagina, and the operator should be able to touch the ear of the child with one or more fingers, before he attempts to introduce the first blade of the forceps.

7. The Accoucheur being placed on a low seat, or in a kneeling posture, let the right hand be slowly passed through the vagina into the pelvis, and search for the ear of the child, which will always be found under the ramus of the ischium, towards the pubes, or diagonally.

8. He must then, with the left-hand, take up the first blade of the forceps, previously lubricated, and warmed if the weather is cold, and conduct it along the palm of the right-hand, between it and the head

head of the child, till the point of the clam reaches the ear. The handle muſt be held backwards towards the perinæum to direct the point in the axis of the pelvis.

9. It muſt then be inſinuated very ſlowly by a wriggling kind of motion, and the point kept cloſe to the head of the child, puſhing it on till it be applied along the ſide of the head over the ear.

10. The firſt introduced hand muſt then be withdrawn, the handle of the firſt blade ſteadily ſecured with it, and the other blade introduced, guided along the left-hand, in the ſame ſlow cautious manner and direction with the former.

11. The blades being applied over the ears of the child, and the handles placed exactly oppoſite to each other, theſe laſt are to be brought gradually together; carefully locked; and, leſt they ſhould ſlip in extracting, properly ſecured by tying a fillet or garter round them; but this muſt be looſed during the intervals of pulling, to prevent the brain from being injured by the continued preſſure.

12. If difficulties occur in the introduction of the second blade, or in bringing the handles together, the resistance must not be attempted to be surmounted by force; but that blade should be withdrawn a little, and the point somewhat raised, by pressing the handle to the opposite side; and, if the second introduced blade cannot be made an exact antagonist to the first, it, or if necessary both blades, must be withdrawn, and again introduced as already directed.

13. It should be a constant rule, when difficulties occur in passing the forceps, to introduce the most troublesome blade first. The handles ought to be exactly opposite to each other, so that the locking may be easily accomplished. It is difficult and dangerous to attempt turning a blade by a semi-rotatory motion from the sacrum to the lateral part of the pelvis, or *vice versa*.

14. In locking the forceps, great care must be taken lest any part of the woman should be included in the hold.

15. If the handles of the forceps are too cloſe together, or at too great a diſtance, the hold is unfavourable, and they will ſlip in making the extraction. The proper diſtance is nearly a finger's breadth; a little more or leſs, according to the variety that occurs in the volume and figure of the child's head.

16. Having obtained a favourable hold, the extraction muſt be attempted in general with one hand only, while the other is employed to guard the perinæum. As ſafety, not expedition, is the object in view, our efforts ſhould be very ſlowly and gently performed, approaching as nearly to nature as it is poſſible for art to arrive. An inconſiderable exertion of mechanical power continued, or frequently repeated, will accompliſh the end as effectually, and much more ſafely, than by precipitating the birth with a brutal raſhneſs.

17. The motion in pulling muſt be equal and uniform in the line of the axis of the pelvis, always in a direction from blade to blade: the operator muſt reſt from time to time;

and while there is any appearance of pains, his efforts should co-operate with those of nature.

18. If the efforts of pulling are slowly exerted, the head in advancing will mould itself to the passage, and make the same mechanical turns as in natural labour.

19. When the head is disengaged from the bony cavity, the axis or curved line of the vagina must be carefully attended to: hence, though the line of action in the beginning of the operation is to incline the handles towards the perinæum, as the head advances through the vagina the direction must be varied, by gradually raising the handles towards the woman's belly to disengage the occiput from under the pubes, till the head is entirely extracted.

20. As the soft parts are protruded, and the orifice of the vagina dilated, by the progressive advance of the child's head, the utmost caution is then necessary to guard the parts from immediate laceration; or, though they should escape it, the sudden or violent contusion may be attended with

unhappy consequences. The perinæum should, therefore, be constantly supported with the hand during the extraction.

21. When the head is completely extracted, the forceps must be removed blade by blade, and the subsequent part of the delivery finished as in natural labour. If the body does not soon follow, or if the pains are deficient or weak, the shoulders may be disengaged by pressing on the back of the scapula downwards to the perinæum, to bring the shoulders to it and the pubes, or diagonally till one or more fingers can be passed under the axilla to help forwards in that direction.

22. If, after several attempts, the forceps cannot be securely applied, or, after a firm hold is obtained, the head does not yield to repeated efforts moderately exerted, they must be dropped, and the delivery otherwise managed according to the discretion and judgment of the practitioner.

PARTICULAR CASES.

IF the general rules for using the forceps are understood, we shall seldom be at

a loss how to apply them in particular cases. They may be reduced to two general classes:

1. The smooth part of the cranium,
2. The face, presenting.

I. The variety of cases where the CRANIUM presents, chiefly are,

1. *Natural Presentation*, with the head so far advanced that the perinæal tumor is considerably formed, the ears of the child nearly lateral, and the face to the coccyx.

The LEVER, by an expert practitioner, may be sometimes in this presentation successfully employed.

If the FORCEPS are used, the woman may be either placed in the natural position, or on her back; it is scarce necessary, then, to tie the handles. When applied, a pain should be waited for. With one hand the perinæum should be guarded; with the other, the handles of the forceps gently raised towards the woman's belly, to bring the hind-head with a half-round turn from under the arch of the pubes; the operator at the same time rising from his

knees, if the woman be placed on her back.

2. The *Vertex preſenting with the Face laterally in the Pelvis.*—The forceps can be ſeldom applied with ſafety in this poſition, till the bulky part of the head has paſſed the brim, with the vertex preſſing againſt the under part of the iſchium, and till an ear can be felt under the arch of the pubes.

The ear, when felt, will determine to which ſide the face points.

Let the woman be placed on the oppoſite ſide where the face is.

Let the blade under the pubes be firſt applied, with the fore-part of the clam, to the occiput of the child.

Let the ſecond blade be introduced oppoſite to the firſt. Bring the handles together, and ſecure with a fillet.

Gently move from blade to blade; favouring the direction (of the face to the ſacrum) which the head as it advances naturally takes; and, as the birth approaches, uſing the proper precautions to ſave the perinæum.

3. *Fon-*

3. *Fontanel Preſentations*—are the moſt difficult and dangerous of the forceps caſes.

In the progreſs of the labour, we generally find, when the crown preſents, that the face points to the pubes ; but the poſition can be readily learned from the figure of the fontanel and the direction of the ear.

The common ſhort forceps can ſeldom be ſucceſsfully employed here, till the head be conſiderably advanced in the pelvis. The forceps ſhould never be attempted to be applied in fontanel preſentations till an ear can be eaſily felt. They muſt be introduced over the ears, and the extraction conducted on the general principles; carefully obſerving the direction which the head inclines to take, and proceeding in the moſt cautious deliberate manner, that the parts of the woman may have time to ſtretch.

When the fontanel preſents, with the crown of the head nearly equal with the brim of the pelvis, and the face placed to the pubes or ſacrum, the long axis of the

head interſects the ſhort diameter of the pelvis. Though the forceps be applied in this poſition, and a firm hold obtained, it is ſometimes impoſſible to accompliſh the extraction; as the head will neither advance in the ſame direction, nor can the preſentation be altered by puſhing up and making the mechanical turns which Dr SMELLIE directs, without the hazard of injuring the mother.

If the common method, therefore, fails, the forceps ſhould be withdrawn, and the long ones attempted to be applied over the forehead and occiput. As the volume of the head, by the compreſſion it ſuffers from the action of the forceps, will be ſomewhat diminiſhed; the extraction may be then ſucceſsfully performed, and the child preſerved.

If this method ſhould alſo fail, in preference to the dreadful operation of embryotomy, Dr LEAK's double-curved forceps with the third blade may be had recourſe to. But of this expedient little can be ſaid with confidence; for the introduction

troductioon of a third blade into a narrow paſſage, when two have already perhaps been paſſed with difficulty, however ingenious the invention, is not eaſily to be put in practice.

All other varieties of cranial caſes muſt be treated according to the rules already directed.

II. Face Presentations.—From its length and unequal ſurface the face will occaſion greater pain, and from the ſolidity of the bones it yields to the propelling force with more difficulty, than the uniform moveable ſurface of the cranium. The head will, however, in moſt caſes, advance in that poſition, by the force of the natural-pains, though the delivery will be more ſlow or painful. I have ſeldom had occaſion, in a well-formed pelvis, to interfere in face-preſentations, in any other manner than by introducing two fingers into the mouth, and pulling down the jaw.

As the attempts of the moſt expert practitioners,

titioners, if too early exerted, may be attended with fatal confequences; and, even when affiftance is given at the proper time, our endeavours are often difappointed; in whatever manner the face prefents, it fhould be allowed to advance as low as poffible: by which means the accefs will be more eafy; and the pofition, for the application of inftruments, more favourable.

In thefe awkward pofitions, the injury occafioned by officious interference has been often fatal; whereas, if time had been given, and the patient properly fupported, the delivery would have generally ended well.

The variety of FACE-CASES may be reduced to the following.

1ft, The face prefenting with the chin to the pubes.

2dly, To the facrum.

3dly, Laterally.

Face-pofitions are readily known, from the inequalities of the furface to the touch; from the prominent nofe, the fiffured mouth,

mouth, &c. In theſe preſentations, care muſt be taken, leſt, by the preſſure of the finger in touching, the eyes ſhould be injured.

When the face is detained at the brim of the pelvis, with trifling or deficient pains, and any urgent circumſtance occurs to render the interpoſition of art neceſſary; it may be ſometimes ſucceſsfully accompliſhed by the introduction of the hand into the pelvis, to raiſe up the face and reduce the poſition by bringing down the cranium, as already directed in Lingering Labour.

The ſucceſs of the practitioner, in theſe caſes, will depend on the bulk of the head, the make of the pelvis, and the progreſs of the labour; for, ſhould the head be firmly wedged in the pelvis, no force that can be employed with ſafety would be ſufficient to alter the poſition.

In ſuch circumſtances we are ſometimes adviſed to turn the child: but *turning* is a troubleſome operation to the practitioner, hazardous to the mother, exceedingly pre-

carious

carious to the child; and ought, therefore, ſcarcely ever to be attempted.

In uſing the forceps in face-caſes, the general rules muſt be attended to. More particularly let the following directions be obſerved.

1. Before the firſt blade of the forceps is applied, let the jaw of the child be pulled down gently with a finger or two introduced in the mouth.

2. Let them be applied over the ears, with the locking parts between the noſe and the lip.

3. In extracting, the operator ſhould favour the inclination which the chin takes to the pubes. The chin muſt be entirely diſengaged from under the arch of the pubes before the round of the head is extracted, otherwiſe there is great hazard of lacerating the perinæum.

§ 2. *CASES where the FOETUS must be DESTROYED by diminishing its Bulk, with a view to preserve the MOTHER'S LIFE.*

WHEN the infant could not be saved by the mode of delivery employed in the extraction, the operation was termed by the ancients *Embryotomy.*

The object of this operaation is to save the mother, when the child cannot be delivered in any other manner. It should never, therefore, be performed, while there is any reasonable prospect of extracting the child alive; and should, when consistent with the mother's safety, be delayed till the child be dead.

Extreme narrowness of the pelvis, or extraordinary bulk of the child, are the only circumstances which justify the necessity of having recourse to the horrid operation of embryotomy.

The chief cause of difficult labour, is diminished capacity of the pelvis from distortion. For when the brim, instead of $4\frac{1}{4}$, inches from pubes to sacrum, measures only $1\frac{1}{2}$, $1\frac{3}{4}$, 2 or $2\frac{1}{4}$ inches, the use of the scissars

ſciſſars and crotchet is neceſſary; and if the tranſverſe diameter comes ſhort of 3 inches, the head of the fœtus, unleſs the ſize be proportionally ſmall or the ſutures very open, is ſeldom protruded ſo low that the forceps can be ſucceſsfully uſed.

We judge of the figure and dimenſions of the pelvis, by the general make and conſtruction of the woman; by the progreſs of the labour; by the touch. When the fault is confined to the bottom, it will readily be diſcovered: *e. g.* if a bump is felt on the anterior ſurface of the os ſacrum, inſtead of a concavity; if the coccyx is angular towards the pubes; if the ſymphyſis pubis is angular towards the ſacrum; if the tuberoſities of the iſchia approach too near each other; or if one tuber be higher than the other; ſuch appearances are deciſive marks of a faulty pelvis.

When the narrowneſs is confined to the brim, it can only be detected by the introduction of the hand into the pelvis; and a conſiderable force and repetition of pain will be requiſite to protrude any part of the

the child's head through the superior strait of the pelvis.

But, if the distortion be not considerable, if the structure of the child's head be loose, by the pressure it suffers between the pubes and sacrum the head will be moulded into a conical or sugar-loaf form; by the overlapping of the cranial bones, the size will be reduced, and delivery accomplished in situations and circumstances where we would little expect it; which should make us cautious in the use of cutting instruments, lest life be destroyed unnecessarily.

We have now rejected the complicated apparatus of *iron specula* for stretching the parts, *screws*, *tire-tetes*, *hooks*, *griffin's talons*, *forceps with claws*, and other *horrid instruments* of destruction invented by the ancients for laying hold of and extracting the child; an operation by these means so difficult and dangerous, when the head was bulky and the pelvis narrow, that the woman frequently lost her life in the attempt.

At

At preſent, we endeavour, as much as is neceſſary or practicable, to diminiſh the ſize of the head, by opening the cranium and evacuating the brain, previous to the extraction.

This is a modern and important diſcovery.

The inſtruments for performing the whole operation conſiſt, ſimply, of a *Pair of Long* SCISSARS, with a CROTCHET or *Blunt Hook.*

When the ordinary means of delivery have failed, or cannot be employed; and the expediency of deſtroying the child to preſerve the mother, after the moſt deliberate reflection, has been determined; ſhe muſt be placed in the ſame poſition, according to the preſentation of the head, as directed in *Forceps Caſes.*

The ſame general rules, as far as practicable, in uſing the ſciſſars and crotchet, muſt be alſo obſerved.

Even in the narroweſt pelvis that occurs, previous to opening the cranium, the ſoft parts ought to be completely dilated,

lated, when the dilatation can be safely waited for, and the head of the child somewhat fixed in the pelvis; for, while the uterine orifice is, in a thick contracted state, and the head remains at a distance, no part having yet been forced within the brim, the application of instruments is difficult, even in the hands of an experienced practitioner; and hazardous under the management of a timid operator.

But, if the patient is delicate or weakly, if the pains are frequent and teazing, if the progress of dilatation of the uterine orifice be slow, and there is reason to suspect considerable resistance to the extraction of the head from the distortion of the pelvis, the opening, with a view to diminish the volume of the child's head, should be performed as soon as there is easy access to apply the scissars. We can then afford to wait, that a convenient interval may take place between the first and subsequent part of the operation; a material advantage to facilitate the extraction, and

moſt eſſential to the ſafety of the patient.

I. Use of the SCISSARS.

The ſciſſars are chiefly employed for perforating the cranium of the fœtus, in order to diminiſh the volume of the head; and alſo for opening the cavities of the thorax and abdomen, when enlarged from monſtroſity or diſeaſe; or for dividing or ſeparating luxuriant parts.

The ſciſſars employed as a perforator ſhould be fully nine inches long; viz. the blades three, and the handles and bows ſix. The points ſhould be ſharp, not the edges. They ſhould have a ſmall degree of curve towards the points; and be provided with buttons, knobs, or rings, inſtead of the angular reſts commonly uſed, which are apt to bruiſe or wound the parts of the woman *.

The

* See a deſcription of the Sciſſars and Crotchet in Dr Smellie's Tables, Pl. xxxix.

N. B. The reference here mentioned always allude to the Edition of theſe Plates lately publiſhed by Mr Elliot.

The method of uſing the ſciſſars is as follows.

The left-hand of the operator muſt be ſlowly introduced through the vagina to the preſenting part of the child, and along it the points of the ſciſſars, carefully guided till they preſs againſt the cranium of the child, which they muſt be made to perforate with a boring kind of motion, till they are puſhed on as far as the reſts; they muſt then be opened fully, carefully re-ſhut, half-turned, and again widely opened, ſo as to make a crucial hole in the ſkull. They muſt afterwards be puſhed beyond the reſts, opened diagonally again and again, in ſuch a manner as to tear and break to pieces the bones of the cranium, and deſtroy the texture of the brain; they muſt then be ſhut with great care, and withdrawn along the hand in the ſame cautious manner as they were introduced, leſt they ſhould cut or tear the uterus, vagina, or any other part of the woman. After a free opening in the cranium has

been made, the brain muſt be ſcooped out with the fingers, blunt-hook, the single lever, or a common ſpoon; and the looſe ſharp pieces of bone muſt be carefully ſeparated and removed with the fingers of the operator, or a pair of ſmall forceps, that no part of the woman be wounded in the ſubſequent attempts for extracting the head. The teguments of the ſcalp ſhould then be brought over the ragged bones of the cranium; and the woman ſhould be allowed to reſt for twelve, twenty-four hours, or longer, according to her ſtrength and other circumſtances: the bones of the cranium will afterwards collapſe; and if the patient be not much exhauſted, or the pelvis not exceedingly diſtorted, the head, its volume having been conſiderably diminiſhed, will be protruded by the force of natural pains. If theſe are not ſufficient, it muſt be extracted, either by means of two fingers introduced within the cavity of the cranium, or by the blunt-hook introduced in the ſame manner, guarding the

the point on the oppoſite ſide while making the extraction. If theſe fail, the crotchet muſt be employed; which, though dangerous in the hands of a raſh, careleſs, or ignorant operator, may be uſed by a ſkillful practitioner with as much ſafety as the bluntеſt inſtrument, and is in fact more manageable than the blunt-hook.

II. Use of the CROTCHET and Blunt-Hook.

The method of introducing the crotchet is, to conduct the point along the hand, like the ſciſſars, till a ſecure hold of the child's head be obtained.

It was formerly uſually applied on the outſide of the ſkull only: but the hook ſhould be always introduced within the opening, and the hand of the operator ſhould be paſſed into the vagina to preſs the fingers on the outſide of the cranium oppoſite, during the efforts of pulling with the crotchet, leſt by looſing its hold it ſhould injure the woman; the conſe-

quences of which might be very unfortunate, or even fatal.

Dr Smellie directs the crotchet to be fixed on the *outſide* of the ſkull, which is more difficult and hazardous than the method now employed; and his directions have been, till of late, very generally followed *.

When the hook ſlips its hold, the looſe pieces of bone muſt be carefully ſeparated and removed with the fingers; the crotchet muſt again be applied a little higher, and the pulling force repeated as before: proceeding in this manner till the ſuperior part

* "Some writers direct us to introduce the crotchet within the ſkull, and, preſſing one hand againſt the point on the outſide, pull along. But this is a *trifling expedient;* and, if a good deal of force is uſed, the inſtrument tears through the thin bones, and hurts the operator's hand, or the woman's vagina, if not both: Whereas, in the other method, there is much more certainty, and a better purchaſe to force along the head, which collapſes and is diminiſhed as the brain is diſcharged, and never comes down in a broad flattened form, according to the allegations of ſome people, whoſe ideas of theſe things are imperfecta nd confuſed," &c. *Smellie's Midwifery*, Book iii. ſect. 7

part of the cranium is cut and divided, and the ſubſtance of the brain diſcharged.

The chief objects to be attended to in the introduction of the hook, are, firſt, to guide the point with the fingers within the opening of the cranium; then, by moving it backwards and forwards, to pervade the bone ſo as to ſecure a firm hold; and, laſtly, in extracting, to guard againſt the accidents of wounding or otherwiſe injuring the woman, which might readily happen if it ſhould loſe its hold.

In the firſt part of the operation, for the reaſons already mentioned, the point of the crotchet ſhould never, if poſſible, be truſted beyond where the fingers can eaſily reach.

One blade, in general, is ſufficient to be employed for the extraction. Both branches can ſeldom be uſed at once with advantage or ſafety.

After the brain is diſcharged, the *blunt-hook* may be ſucceſsfully employed as an extractor, where the pelvis is not remarkably faulty. The ſmall end is to be paſſed into the opening of the cranium, and the point

to be guarded with great care, by preffing externally on the cranium, oppofite, as in ufing the crotchet.

As cafes of extreme narrownefs of the pelvis from diftortion very feldom occur, the head will, in general, yield to repeated efforts of pulling, in the manner juft now directed.

If this method fhould fail, the crotchet muft be introduced within the opening as before, and fixed in the bafis of the fkull where a fecure hold can be obtained; the handle fhould be covered with a cloth, to enable the operator to take a firm hold; the point fhould in general be directed pofteriorly to the mother; and in employing the neceffary exertions of pulling, the axis of the pelvis and vagina fhould be attended to. The operator fhould then endeavour to bring down the head by pulling at firft moderately, and at proper intervals increafing the force according to the refiftance from diminifhed capacity of the pelvis. He muft referve his own and patient's ftrength, by refting from time to time,

fup-

supplying her with suitable nourishment; and, in a word, must persevere in his endeavours to finish the extraction in the best manner the circumstances of the case will admit of.

In face-cases, where it is impracticable to alter the position, and when the pelvis is much distorted, the double crotchet is recommended; the handles must be well secured, kept well backwards towards the perinæum, and the motion always from blade to blade. It very seldom, however, happens that there is occasion for the double crotchet: by this means the head is flattened in pulling, and prevented from taking the proper direction; whereas if one blade only be employed, the head is lengthened, and in pulling can better accommodate itself to the shape of the pelvis as it passes along.

Besides, in face-presentations, by applying one blade only towards the lateral part, and pulling obliquely to the opposite side, the position may be altered, and easy access at last obtained to the hairy scalp, to make the

the perforation, evacuate the brain, and diminiſh the volume of the head.

When the head is extracted, if from extreme narrowneſs of the pelvis the ſhoulders ſhould give conſiderable reſiſtance, a crotchet muſt be fixed in the ſhoulder, in order to bring down one of the arms, and by pulling at it and the remaining portion of the head covered with a cloth, eaſy acceſs will be procured to the other arm, which muſt be managed in the ſame manner. The crotchet muſt then be fixed in the trunk among the ribs, the thorax and abdomen opened if neceſſary, and the delivery accompliſhed by tearing the child away in pieces.

Should it be poſſible for a caſe to occur, which by the bye is ſcarce within the reach of reaſon to comprehend, an accident which can only happen to an ignorant or very blundering practitioner, where the vertebræ of the neck have been divided by the crotchet, and the head ſevered from the body, both being ſtill retained in the pelvis: In theſe circumſtances, the head, if

it cannot be extracted firft, muft be pufhed up above the brim of the pelvis, the crotchet or blunt-hook muft be fixed under the axilla, the arms muft be brought down, and the body extracted, by fixing the crotchet below the fcapula, on the fternum, or among the ribs *; a method preferable to

* Such a cafe actually occurred to the late Mr Robert Smith furgeon in this city, foon after he began to practife. The particular circumftances of this fingle hiftory, as communicated to me by Mr Smith himfelf, are as follows.—A young woman had been feveral days in ftrong labour; the head, he imagined, had originally prefented in an oblique direction at the brim of the pelvis. The patient was fo much exhaufted when Mr Smith was called, and fhe was otherwife feemingly fo low, that it was doubtful to him whether fhe could fupport the fatigue of delivery. The cafe appeared the more difcouraging and unfavourable, becaufe, on touching, he could not determine the manner in which the child prefented, its head having been formerly cut off from the body by an unfuccefsful attempt to procure a delivery; nor could he even pofitively fay, whether it was a fœtus, or a very fingular monftrous production, from the uncommon feel which the ragged ftump of the neck gave to the touch. Determined, however, to give the woman

to that of turning, as ſome adviſe. The head muſt afterwards be extracted with the crotchet.

In thoſe caſes of narrow pelvis, where it is abſolutely neceſſary to diminiſh the volume of the child's head to procure the extraction with ſafety to the mother, our ſucceſs will chiefly depend on a ſeaſonable performance of the firſt part of the operation. The head ſhould be opened, and the brain diſcharged, as ſoon as the dilatation of the orificium uteri will admit of it. The woman may be then ſafely allowed to reſt for 24 hours or more, even till the

woman a chance of life, he fixed a crotchet in the part which preſented, brought down firſt one arm, then another; and afterwards, to his aſtoniſhment, extracted the trunk of a *body without a head.* On inquiry, he was informed that a ſurgeon in the neighbourhood had in vain, after many fruitleſs efforts, attempted to make the extraction, but abandoned the woman in that ſituation, and aſſured the relations it was not poſſible to accompliſh the delivery; which they had artfully concealed from Mr Smith. The head was afterwards extracted with the crotchet, and the woman had a good recovery.

the compages of the cranial bones of the fœtus be somewhat dissolved by putrefaction: the natural pains, during that process, will either be sufficient to accomplish the birth; or the head will by their means be protruded so low, that the access will be easy to apply the crotchet, and little force be necessary to procure the extraction. Whereas, if the first part of the operation (to wit, making a sufficient opening into the cranium for the discharge of the brain) be too long delayed, the consequence of violent mechanical force employed, where the extraction must be performed in haste, may be fatal to the patient.

For the propriety of this practice we can appeal to the experience of every practitioner; and if arguments were necessary to enforce it, we might refer to various histories mentioned by authors, where the head of a fœtus in a semi-putrid state was expelled by the natural pains, after it had been severed from the body and retained in the uterus for several days; the unfortunate woman having been abandoned to

the moſt deplorable ſtate of deſpair by the inhuman operator.

It is aſtoniſhing, that the rule of obſerving an interval between the firſt and ſecond ſteps of delivery in *embryulcia* ſhould be regarded, in the writings of the lateſt author on this ſubject, as a trifling inſignificant precaution, when the facility of the operation to the practitioner, and ſafety of the patient, ſo much depend on it*.

§ 3.

* "It has of late become faſhionable in practice, when the head has been opened, and the brain evacuated, to ſuffer the remainder of the delivery to be effected by labour, or, if this is inſufficient, to poſtpone it for ſome hours or longer, in order to ſuffer the bones of the cranium to collapſe and be puſhed forward, and the woman to be refreſhed. But this delay ſeems totally improper: 1. Becauſe the opening of the head ſhould not be attempted whilſt the woman is capable of bearing ſo much longer labour, under the expectation, or the hope at leaſt, that the effects of ſo much farther delay might poſſibly bring it within the reach of the forceps. 2. There is no neceſſity for greatly fatiguing or exhauſting the woman in opening the head, or even in bringing it down, provided it be ſuffi-

§ 3. *Cases where it is proposed to enlarge the* DIMENSIONS *of the* PELVIS *to procure a safe passage to the* CHILD *without materially* INJURING *the* MOTHER.

M. SIGAULT is chiefly intitled to the honour of having first proposed, and successfully performed, this operation. M. Le ROY, however, one of the most eminent teachers and practitioners of Midwifery in France, who divided the honour with M. SIGAULT, deserves also to be here mentioned. He was presented, at the same time, with a medal from the Faculty of Paris; introduced, along with M. SIGAULT,

sufficiently reduced in its size. 3. If any inflammation has taken place, the soreness will be greater after the delay. Lastly, Bad symptoms and accidents may occur during the delay." *Foster's Midwifery*, p. 171. —The directions in this Treatise for opening the head and extracting with the crotchet, are, in other respects, concise and explicit. See from cccxxxii. to end of cccxxxvi.

GAULT, to the king; aſſiſted perſonally at the operation, and firſt publiſhed an account of it.

But although the ſucceſs of a few caſes ſhows, that the articulation at the cartilaginous *ſimphyſis pubes* is capable of diviſion by inciſion with ſafety to the patient, tearing the bones forcibly aſunder by violent extenſion of the thighs, till they are ſo widely ſeparated as to procure a conſiderable increaſe in the dimenſions of the pelvis, muſt be a precarious and hazardous operation: Precarious, in affording ſufficient ſpace to admit of the extraction of a living child, where the pelvis is conſiderably contracted from diſtortion; and hazardous in its conſequences to the mother, when much force has been employed either to obtain a ſeparation of the bones, or afterwards to accompliſh the delivery, where there is conſiderable reſiſtance to the extraction of the fœtus.

This is ſufficiently proved from the event of ſeveral caſes, particularly of two hiſtories related in an inaugural diſſertation by Dr

Dr BENTLY*, where this operation was performed on the living body; the one by Profeſſor SIEBOALD of the univerſity of Wurtzburg in February 1778, the other by Dr GUERARD profeſſor of anatomy at Duſſeldrope in May following.

In the former, little ſpace, not more than a finger's breadth, after the utmoſt force that could be ſafely applied, was procured; and a dead child was with difficulty extracted. Fever enſued after the operation, urine for ſeveral weeks paſſed by the wound, the bones exfoliated, and the patient recovered with difficulty.

In the latter caſe, though the bones of the pubes were ſeparated fully an inch and a half from one another, the advantage obtained by it was ſo immaterial, that the child was with difficulty extracted piece-meal; the conſequence was, that, notwithſtanding every poſſible care and attention, the violence employed in forcing the bones was fatal to the woman,

U who

* Publiſhed at Straſburg 1779. See Edinburgh Medical Commentaries, Part iii. for the year 1780.

who "was ſo much reduced and ſpent, "that ſhe died the 10th day after the "operation."

It has been ſucceſsfully practiſed, however, ſince SIGAULT's operation, in different parts of France, by M. DESPRES accoucheur in Brittany, M. GAMBON at Mons in ſeveral inſtances *. M. NOGEL chirurgien accoucheur †, and others; once in Spain, and once and again in Holland. But it has repeatedly failed in procuring a ſafe delivery to the child, and been fatal to the mother; the bladder has been often wounded, incurable emiſſion of urine and other dreadful accidents have followed.

We may therefore conclude, that altho' in certain circumſtances the diviſion of the oſſa pubis by inciſion at the ſymphyſis may

* Recherches Hiſtoriques, &c. ſur la Section de la Symphyſe du Pubes, par M. Alphonſe le Roy, &c. Paris, 8vo, 1780.

† Anatomie des Parties de la Generation, &c. Seconde Edition. Augmentée de la Coupe de la Symphiſe. Par M. Gautier Dagoty, pere, anatomiſte panſioné de Roi. A Paris 1778.

may be practicable and ſafe, the ſeparation by extenſion is uncertain and hazardous. It might perhaps, in ſome *rare inſtances*, be the means of preſerving a child who would otherwiſe be the victim of the operation of embryulcia; but as the advantage derived from it by augmenting the tranſverſe diameter of the pelvis at the ſuperior aperture is trifling, it can ſeldom be ſucceſsfully performed with reſpect to the child, where the diſtortion is ſo conſiderable as to deſtroy the capacity of the baſin, and render delivery by the ſciſſars and crotchet neceſſary; a method which will always obtain the preference in every well regulated ſtate, and with every humane practitioner, if the Sigaultian operation expoſes the life of the more valuable parent to danger.

The operation conſiſts in making an inciſion with a ſcalpel through the common integuments and ſoft parts, in the direction of the commiſſure of the oſſa pubis. The articulation at the cartilaginous ſymphyſis, muſt afterwards be di-

vided by the ſame inſtrument. The knees of the patient are to be kept gently ſeparate by an aſſiſtant. A catheter is directed to be introduced, to prevent the accident of wounding the bladder in the operation; and we are adviſed, for the ſame reaſon, to make the inciſion, both of the ſoft parts and cartilages, a little towards the left ſide. The diſtraction of the bones is afterwards to be attempted, as far as is neceſſary or practicable, by a cautious and gradual extenſion of the thighs.

The operation being finiſhed, the contractile efforts of the uterus are to be waited for to expel the child. The patient is afterwards to be confined to bed for ſeveral weeks, a bandage to be applied round the loins, and the management directed on general principles. But if the natural pains ſhould then fail, the ſciſſars and crotchet muſt be uſed; the child muſt be turned; or the Cæſarian ſection had recourſe to.

The firſt propoſition, by deſtroying the child, diſappoints the original intention of the

the operation. For, if the mother could be delivered by the crotchet with ſafety, at the expence of deſtroying the child, that method will always be preferable to a precarious attempt to ſave the child, at the hazard of the mother's life. If the pain and danger ſhe ſuffers in the new operation, is not to be compenſated by a moral probability of ſaving the child, the operation is then *entirely uſeleſs*. And again, if it ſhould fail to enlarge the dimenſions of the pelvis, and embryulcia be afterwards neceſſary, the mother, in that event, is wantonly expoſed to the increaſed danger ariſing from both operations combined, with the additional hazard from the violence of mechanical force employed to extract the child, after the parts which ſuffer in the firſt operation have been wounded, and the bones torn from each other.

The great ſtreſs applied to the nervous aponeurotic parts, at the ſacro-iliac ſymphyſis poſteriorly, may of itſelf alſo be fatal to the patient, or prove the cauſe of incurable lameneſs, independent of the

other accidents incident to the operation.

With all deference to an authority which is univerſally reſpected, and which in few inſtances has been called in queſtion, we muſt beg leave to differ in opinion from Dr HUNTER, whoſe ſentiments on this ſubject, though in general unfavourable to the operation, incline him to ſuggeſt, "that "the crotchet may be employed with ſafe- "ty to the mother when it fails."

The ſecond method, of attempting delivery by *turning*, with a view to ſave the child if the natural pains ſhould be inſufficient to protrude the head, after the bones of the pubes have been divided by SIGAULT's operation, although we are informed it has been ſucceſsfully practiſed in one or more caſes in the Continent, is a moſt dangerous expedient to the mother. The proſpect it affords for the ſafety of the child in a narrow pelvis, is too remote to encourage an experienced practitioner, who knows the difficulties that often attend turning in more favourable circum-

ſtances,

ſtances, to engage in this troubleſome taſk. Such a propoſition in this country would be rejected with contempt by the generality of practitioners.

The *Cæſarean ſection* is the third method propoſed for accompliſhing delivery with ſafety to the child, the ſection of the pubes having failed, if the child cannot be eaſily extracted by the crotchet. It hath actually been practiſed in a ſingle inſtance, under the circumſtances juſt now mentioned. It is needleſs to add, that the unhappy patient ſoon after died. A recovery, under ſuch complicated ſufferings, would have been almoſt miraculous; and few practitioners will be hardy enough, if their miſguided judgment were permitted to rule, to venture a ſecond time on an experiment ſo ſtrictly deſperate.

Dr Leak has, with his uſual judgment, good ſenſe, and humanity, conſidered the advantages and diſadvantages of the Sigaultian operation; and ſeems to favour it in preference to the Cæſarean ſection, be-

caufe the former " does not carry with it " thofe ideas of cruelty which attend the " latter, where the patient is, as it were " embowelled alive. No formidable ap- " paratus is neceffary, the fection being " made with expedition, and without pain " and danger: no blood-veffel, nerve, or " other parts effential to life, are wounded; " thofe divided being only *cutis*, *cellular* " *membrane*, and infenfible cartilage, from " which neither *hemorrhagy* nor *fymptoma-* " *tic fever* are to be apprehended *." He is therefore inclined to think, that with thofe " who are difpofed to give this new " operation a fair and judicious trial, as " *it has already fucceeded, it will again fuc-* " *ceed.*" But though, in the body of a dead female fubject in the Weftminfter lying-in Hofpital, the bones of the pubes after incifion receded $2\frac{1}{8}$ inches without much violence, it does not appear that any confiderable acquifition of fpace in the di- menfions of the pelvis was procured by it.

I

* Dr Leak's Practical Obfervations on the Child-bed fever, &c. *5th edition*, p. 255.

I have had occasion to make the same experiment in repeated instances on the dead subject with no better success.

Upon the whole, therefore, from all the information we have yet received of the event of this new operation, we have little reason to adopt it in preference of the method of delivery by the crotchet, wherever that instrument can be used with safety to the mother; and, as the space to be gained by it is as uncertain as the exact dimensions of the child's head before delivery, it would be rash and unwarrantable to adopt an expedient, precarious with respect to the child, and highly dangerous to the mother, in substitution of embryulcia; which, if not too long delayed, may, in the present improved state of the art, be employed in most cases of distortion with *perfect safety* to the mother, who is always justly intitled to the first place in our intentions, and whose valuable life is the most interesting and important object of our regard.

§ 4. *Method of* EXTRACTING *the* CHILD *by the* CÆSAREAN SECTION.

WHEN the child could not be delivered by the natural paſſages, or when a woman died undelivered though the child was probably alive, an operation with a view to preſerve the mother and child in the firſt caſe, and to ſave the child in the latter, has been ſtrongly recommended. It is ſuppoſed by many authors to be ſafe and juſtifiable in the former caſe, but has been warmly reprobated by others.

It is ſtyled *Cæſarean Section* from Julius Cæſar, who is ſaid firſt to have received his appellation from this circumſtance of his birth, and in his turn to have conferred it on the attempt. There is much reaſon, however, to ſuſpect, that this relation, like many other ſtories of Pliny, is fabulous; and it is more reaſonable to ſuppoſe that the name, in fact, was the chief origin of the ſtory. The ſame author attributes the birth of Manlius Scipio to the ſame operation.

tion. But in thoſe days the Grecian phyſicians were held in abhorrence for the cruelty of their operations, and it is ſcarcely probable they would then dare to propoſe the delivery of the child by an expedient which appeared to be as raſh and formidable in the attempt as dangerous in the conſequences. If there is any foundation for the ſtory, it probably refers to the attempt of ſaving the child by this operation in caſes of the ſudden death of the mother; for there is no certain accounts of its having ever been performed by the ancients on the living ſubject.

Books are full of hiſtories to ſhow that Hiſterotomy has been practiſed with ſucceſs by the moderns, on various occaſions; yet authors are much divided in opinion on the ſubject. Some poſitively deny that a woman can ſurvive the daring attempt: while others contend that it is frequently ſafe, though generally dangerous; and relate many examples where it has not only been performed with ſucceſs, but repeatedly practiſed on the ſame ſubject.

MAR-

MARCHANT, MAURICEAU, GULIMEAU, PARE, OULD, and others of equal authority, have exprefsly written againft it.

SIR FIELDING OULD calls it "a deteftable, barbarous, and illegal piece of inhumanity;" and endeavours to prove the improbability, and even impoffibility, of its fuccefs, from its analogy with other wounds, as well as the anatomy of the parts. He is at great pains to invalidate the authority of BAUCHIN, ROUSSET, LA MOTT, and the other favourers of that unparalleled cruelty, by denying the facts they have endeavoured to tranfmit to pofterity in fupport of it. None of thefe cafes, he hopes, will gain any credit from the readers of the prefent age. He confiders thefe hiftories as fable and impofture, and concludes "from reafon, theory, anatomy, and every thing confiftent with furgery, that the Cæfarean operation muft be certainly mortal; and hopes it will never be in the power of any one to prove it by experience *."

On

* Ould's Treatife of Midwifery, p. 196.

On the contrary, if we could rely on the testimony of authors, since the first accounts of the Cæsarean section successfully practised by a common sow-gelder on his own wife in the beginning of the 16th century *, many well attested histories appear on record, in which it is said to have been successfully performed.

But the accounts which history transmits, both of the cases and causes for the operation, are so vague and absurd, they carry along with them so little appearance of probability; that nothing can be concluded from them; and, in fact, such fabulous histories should be received rather with incredulity than confidence. Successful events are introduced with much pomp in the writings of authors. One author copies from another, the name is changed, many of the circumstances are disguised; in this manner a single case has given rise to several. Authors, on the contrary, have been generally silent when the event was unfavourable. Even the testimony of M.

4 Sou-

* *Vide* Bauhin's Appendix to Rousset's Treatise.

SOUMAN, DE LA PYRONIE, LA FAYE, of France, and others who have written in favour of the operation*, if we ſhould acknowledge the authenticity of the caſes, afford little foundation to encourage us to perform it on the living ſubject.

We ſhall next, therefore, inquire into thoſe circumſtances in which the operation is ſuppoſed to be neceſſary, in order to ſhow, that, in general, they are inſufficient indications for having recourſe to it.

Hiſterotomy, according to authors, ſhould be performed when the pelvis is faulty; when the paſſages are contracted by conſtriction from cicatrix, calloſities, or tumors anywhere about the vagina or os tincæ; when the uterus is torn, and the child eſcaped partially or wholly into the cavity of the abdomen; in caſes of extra-uterine conception; herniæ of the uterus; when the poſition of the child is unfavourable for

* See Mem. of the Academy of Surgery, tom. I. & II.; Edinburgh Medical Eſſays; Heiſter's Surgery; Burton's Midwifery; London Medical Eſſays and Inquiries, &c.

for turning; or, the maſs of the fœtus of an extraordinary ſize.

I. *Diminiſhed Capacity of the Pelvis, from bad Conformation of the Bones.*—It is only when the hand of the operator cannot be admitted within the aperture of the pelvis, or, in other words, when the narrow diameter at the brim or bottom does not exceed from one to two inches, that this operation is juſtified by modern practitioners in conſequence of diſtortion. For, when the capacity of the pelvis is ſo ſtrait as not to permit any part of the child's head to be protruded through the ſuperior aperture, not to admit two fingers of the Accoucheur's hand at the bottom to conduct proper inſtruments with ſafety to open and diminiſh the fœtus's head, and ſecure a firm hold to procure the extraction, the Cæſarean ſection has been practiſed, or the unfortunate woman become the victim of the imperfection of the art.

In the city of London, during about 100 years, of between 50 and 60 women whoſe pel-

pelviſes have been much diſtorted, the Cæſarean ſection has only been performed in two inſtances, viz. by Mr THOMSON Surgeon to the London Hoſpital, and by Mr J. HUNTER *. In all others the child was delivered by embryulcia; yet I am well informed not above 5 or 6 of the whole number of women juſt now mentioned, died in conſequence of the violence employed in delivering with the crotchet †. Happily ſuch a ſtructure as to reduce the capacity of the pelvis within ſo narrow limits, very ſeldom occurs in practice; hence in the preſent improved ſtate of the art, the neceſſity for the frightful, horrid, and awful expedient of the Cæſarean ſection, muſt be very rare and uncommon, even when a bold practitioner would hazard the performance of it.

In

* *Vid.* London Medical Eſſays and Inquiries, Vol. IV. V.

† In the former imperfect Edition of this Work, the proportion of women ſaved and deſtroyed by embryulcia was reverſed. The Author was led into this miſtake by miſinformation from a reſpectable Accoucheur of London.

In the subject of the Cæsarean section, whose history is related by Dr COOPER and Mr H. THOMSON, London Medical Essays and Inquiries, Vol. IV. already referred to, the transverse diameter of the pelvis at the brim, to wit, from the upper part of the sacrum to the opposite symphysis pubis, measured only $\frac{7}{8}$ths of an inch.

In the case related by Dr COOPER, Vol. V. of these Essays, the greatest space of the transverse diameter at the brim did not exceed 1$\frac{1}{4}$ inch, to wit, from the projection of the sacrum to the symphysis pubis; and gradually became narrower at each side, till it terminated latterally in a small point*. At the bottom the rami ischii were so much contracted, that the space between them was somewhat less than half an inch.

It is obvious to a demonstration, that the volume of the head of a mature fœtus cannot, by the operation of embryulcia, be diminished to such a size as to render it capable of passing through a pel-

* London Medical Essays and Inquiries, Vol. V. p. 225.

vis whoſe dimenſions do not exceed either of thoſe juſt now mentioned.

The following caſe, however, ſhows the perfection to which we have now arrived in the conſtruction of obſtetrical inſtruments. Dr KELLIE extracted a mature fœtus through the openings of a diſtorted pelvis, whoſe dimenſions were theſe: Tranſverſely at the brim from the arch at the ſacrum to the ſymphyſis pubes, 1 inch $\frac{5}{8}$ths and $\frac{1}{16}$th; on the right-ſide of this ſtrait, 2$\frac{1}{16}$th inches; on the left ſide, 1$\frac{1}{2}$ inch. The woman had been five days in ſtrong labour before Dr KELLIE had an opportunity of ſeeing her. "The head "remained above the brim of the pelvis, "and had not then made the ſmalleſt pro- "greſs. It was of a large ſize, firmly oſ- "ſified; and the parts in the paſſages were "ſo extremely tender, that the poor wo- "man, who was ſomewhat faint, and much "fatigued by the protraction of labour, "could not bear the moſt gentle examina- "tion without great pain." The Doctor proceeded to perform the operation of embryulcia

bryulcia "by making a large opening in "the cranium, which was effected with "difficulty, on account of the head pro-"jecting so much over the pubes that the "shank of the sciffars was pressed forcibly "against the perinæum, to get the points "in a proper direction." He now left the patient; and on returning, in 24 hours after, "found the head advanced into the "pelvis so low, that the jagged end of one "of the parietal bones pressed against the "inner part of the perinæum, very near "the os externum. By the help of the "blunt-hook only, the head was brought "forth, in little more than a quarter of an "hour, amazingly flattened." The shoulders and body gave considerable resistance, but were also extracted with the blunt-hook.

It is much to be regretted, that the unfortunate patient, who seemed to do well for a week, "having imprudently "drank freely of raw porter, with some "people who came to see her, was after-

" wards ſeized with a violent purging, of " which ſhe died in three days *."

The above caſe affords, however, an important leſſon of inſtruction to practitioners of midwifery. If, after the patient had been five days in hard labour, the head of a mature fœtus could be truſted for 24 hours after opening to the natural pains, and paſs through a diſtorted pelvis of the dimenſions above-mentioned, ſo low as to preſs with the parietal bones againſt the perinæum, and be capable of extraction with the blunt-hook;—we need not deſpair of attempting delivery with the ſciſſars and crotchet, where the pelvis comes ſomewhat ſhort of theſe dimenſions, if the head be opened early. For, by waiting with patience, as long as there is time for it, the head will collapſe, and be protruded ſo low by the force of the pains, that the acceſs will afterwards be eaſy to apply the crotchet; ſo that by pulling with it, and aſſiſting with the fingers to adapt the ſmall axis of the head to the leaſt diameter

* Johnſon's Midwifery, page 284.

meter of the pelvis, the extraction will be accomplished with facility and safety.

The projection of the angle of the sacrum towards the pubes, is by much the most frequent mode of distortion. In some instances, the intermediate space is so inconsiderable, that the diameter at the brim is divided, as it were, into two cavities. In this species of distortion, it is evident, on account of the distance of, and consequently difficult access to, the presenting part of the child, that the danger in embryulcia will be proportionably considerable: for if the narrowness at the brim proves an unsurmountable obstacle to the passing, and the figure and *distortion at the bottom* prevents the introduction of the hand to direct and apply the proper instruments with safety to the mother; in such circumstances we must either abandon the patient to utter despair, or by the last resource of desponding hope endeavour to save her.

It remains, then, to inquire,

1°. If dividing the bones of the pubes by the lately invented operation, affords a

reaſonable proſpect of procuring even a ſafe delivery to the mother when it cannot be accompliſhed by embryulcia?

2. Is the capacity of the pelvis, in any inſtance, ſo much deſtroyed, from diſtortion, that a dead child cannot be extracted by means of the ſciſſars and crotchet?

First, Where the pelvis is ſo much distorted, that the diminution of the child's head to ſomewhat more than half of the uſual ſize is inſufficient to render delivery practicable, SIGAULT'S operation could have little effect to enable the head to paſs unleſs its volume had been previouſly leſſened. Some advantage would then be gained by dividing the bones of the pelvis; but not ſo much as to encourage us to hope that the child would afterwards be propelled by the natural pains, or, in theſe circumſtances, extracted by the crotchet, without employing a degree of violence which might probably be fatal to the mother.

Secondly, That the aperture of the pelvis is, in ſome caſes, ſo narrow from distortion, as to prove an unſurmountable obſtacle

stacle to the passage of the child by embryulcia, the histories of the Cæsarian section in the 4th and 5th volumes of the London Essays already referred to, afford striking and incontestible examples.

In the pelvis of a woman on whom the Cæsarian section was performed by Dr YOUNG, late professor of midwifery in this University, the transverse diameter at the brim does not measure above 1¾ inches at one side; the bones of the pubes are bent, and refuse admittance to a finger at the arch; the sacrum is convex anteriorly; the anchylosed coccyx is angulated; and the distance from it to the tuberosities of the ischia is somewhat less than 1¾ inches. In a pelvis of this construction, where the bottom, and indeed whole capacity, are affected by the distortion, embryulcia could scarce be attempted.

In a collection of bones, in my possession, the construction of a distorted pelvis of a female skeleton is still more unfavourable for the operation of embryulcia than any of those yet mentioned. The diameters at the brim

are almoſt entirely deſtroyed by the projection of the lumbar verterbræ and convexity of the ſacrum; the diſtance at one ſide from the ſacrum to the ilium being $\frac{3}{4}$ths of an inch only.

It is ſufficiently apparent, that here nothing but the Cæſarian ſection could give the patient the moſt diſtant chance of life from the danger which threatened.

It is probable, therefore, that a faulty pelvis, whoſe ſmalleſt diameter at the brim or bottom does not exceed $1\frac{1}{2}$ inch, or $1\frac{3}{4}$, is one motive for the deſperate reſource of the Cæſarian ſection. The difference in the ſize and ſtructure of a child's head may alſo render it neceſſary, where the tranſverſe diameter of the ſuperior aperture of the pelvis, and lateral one of the outlet, ſomewhat exceed the dimenſions juſt now mentioned.

Before we inquire into the practicability of the Cæſarian operation with a probability that the mother will ſurvive it, we ſhall next endeavour to ſhow that *all the other* caſes in which it has been performed

formed or proposed are improper indications for it.

II. *Constriction from Cicatrix, Callosity, and Tumors, anywhere about the Vagina or Os Tincæ.*—The vagina and os tincæ are often affected with constrictions from cicatrices, with callosities and tumors; but it is never necessary to perform the Cæsarean section on their account. Tumors in the vagina may generally be removed with safety even after the commencement of labour, and delivery happily succeed; or it may be sometimes practicable for the accoucheur to pass his hand by the side of the tumor, to turn the child, and deliver. There are many instances where, at the commencement of labour, it was impossible to introduce a finger into the vagina; yet the parts have dilated as labour increased, and the delivery terminated happily. At other times the dilitation has begun during pregnancy, and been completed before delivery A striking instance of this kind is recorded in the Mem. de l'Acad.

des Scienc. 1712, of a woman whofe vagina was no larger than to admit a common writing quill. She had been married at fixteen, and conceived eleven years after. Towards the fifth month of her pregnancy, the vagina began to dilate, and continued to do fo till full time, when fhe was fafely delivered.

GUILEMEAU dilated, and LA MOTT extirpated, callofities in the vagina and os tincæ; when the children were fuccefsfully expelled by the force of natural labour.

Dr HARVEY relates a cafe where the whole vagina was grown together with cicatrices: nature, after a tedious labour, made the dilatation, and a large child was born.

M. LA MOTT* mentions his having delivered three women, who had not the fmalleft veftige of an orifice through the vagina to the uterus. Dr SIMPSON cut through a callofity of an os uteri which was half an inch thick †, &c.

Upon the whole, tumors in the vagina, or

* Traité des Accouchemens, p. 527

† Edinburgh Med. Effays, Vol. III.

or about the orificium uteri, may be safely extirpated without danger of hæmorrhagy or other fatal symptoms, and the delivery will happily succeed: And, if the vagina be impervious, the os externum shut up, or the labia grown together, the parts should be opened with a scalpel. If the os externum be entirely closed, if the cavity of the vagina be filled up, or the passage considerably obstructed by tumors, callosity, or constriction from cicatrix, and there is no reason to suspect a fault in the pelvis, of which a judgment may be formed by the common marks of deformity, under-size, or a rickety habit; it is by much the best practise to open a passage through the vagina, and deliver the woman in the ordinary way. If there be no defect in the pelvis, the head of the child, or any other bulky part that presents, will advance in this direction, till it meets with a resistance in the soft parts: the teguments, in that case, will be protruded before the child's head, in form of a tumor, when a simple incision downwards

wards to the perinæum, in the direction of the axis vaginæ, will remove the cauſe of difficulty, by relieving the head; the child will afterwards ſafely paſs, and the wound will heal without any bad conſequence.

When there is any defect in the ſoft parts, which prevents the acceſs of the finger into the vagina, the head of the child may be readily felt, and the ſtate of the parts in ſome degree judged of by the introduction of a finger into the anus.

III. *Lacerated Uterus* is another cauſe, for which this operation has been recommended. The uterus may be ruptured from the croſs preſentation of the child in time of pregnancy, when the uterine fibres do not readily yield to the diſtending cauſe, or from mechanical violence in attempting delivery. Theſe caſes are generally fatal; and the life of the mother can ſeldom be ſaved by the Cæſarean ſection, after the fœtus eſcapes through the torn uterus into the cavity of the abdomen; becauſe

becaufe inflammation and fphacelus have generally affected the parts of the uterus that fuftained the preffure, previous to the rupture; if otherwife, convulfions or other fatal fymptoms foon enfue, from the quantity of blood, waters, &c. poured into the cavity of the abdomen.

When the child cannot be extracted by the natural paffages, tremors, fingultus, cold fweats, fyncope, and the death of the mother, for the moft part fo quickly follow, that it will at leaft feem doubtful to a humane practitioner, how far it would be advifable, after fo dreadful an accident, the woman apparently in the agonies of death, rafhly to perform another dangerous operation, even with a view to preferve the child, before he had waited till the mother recruits or expires.

If part of the child be contained within the uterus, and the feet can be reached, the beft practice is to deliver by the orifice of the womb. When the whole fœtus has efcaped entirely without the uterus, the Cæfarean operation is recommended as the

the only means of preſerving both mother and child

But if the operation on this occaſion be ever allowable, it may be aſked,

1. At what time ſhould it be performed?

2. Would it not have the appearance of inhumanity, to have recourſe to this expedient immediately after the uterus burſts, when the woman is ſeemingly ready to expire, although it be the only time when there is a chance of ſaving the child?

3. In moſt caſes where this accident happens, ſhould the Cæſarean ſection be made, it is not highly improbable that the mother will ſurvive ſo terrible a laceration? At leaſt the uncertainty how long ſhe may ſurvive it, ſeems a conſiderable obſtacle to the operation under ſuch diſagreeable circumſtances; *ne occidiſſe videatur, quem ſors interemit.*

IV. *Ventral Conception* is a fourth indition for this operation, Theſe are either

in the ovaria, tubes, or cavity of the abdomen, and seldom arrive at great size; or are retained, often for a great many years, without occasioning much complaint. The issue of these conceptions has also been no less various than extrarordinary; for, after having been long retained in an indolent state, abscesses or ulcerations have formed, and they have been discharged through all the different parts of the abdomen*.

Most women feel pain and violent motion towards the term of ordinary delivery, in these cases of ventral conception; if, therefore, the operation be ever necessary, then is the proper time to perform it. But in general, as the separation of extra-uterine fœtuses from their involucra may occasion immediate death in many cases, in consequence of the vast hæmorrhagy that might ensue from the non-contractile power of the parts to which they adhere; unless they point outwardly, or excite vio-

* *Vid.* Mangeti Bibliothec. Medicin.; Journal de Scavans; Memoir. de l'Acad. des Sciences; Chapman's Midwifery; London Medical Observations; Dr Duncan's Medical Commentaries, &c.

violent ſymptoms, their expulſion ſhould be univerſally truſted to nature.

V. *Herniæ of the Uterus* are never ſufficient indications to induce us to perform the Cæſarean ſection, as the uterus is very rarely influenced in ſuch a manner, that the orifice cannot be reached, and the delivery ſucceſsfully made. Many inſtances are to be found among Surgical authors, where deliveries, under ſuch circumſtances, have been happily performed, without having recourſe to ſo hazardous an expedient. MAURICEAU mentions a caſe, where the uterus in a ventral hernia was puſhed along with the inteſtines above the belly, and contained in a tumor of a prodigious ſize; the woman, however, was delivered at the end of her time in the ordinary way. M. LA MOTT relates the hiſtory of a woman in a preternatural labour, whoſe uterus and child hang down pendulous to the middle of her thigh; but whom, notwithſtanding, he ſafely delivered. And Dr RUYSCH gives a caſe, where the mid-

midwife reduced the hernia before delivery, although it was prolapsed as far as the knee, the delivery was safely performed, and the woman had a good recovery.

The Position or Bulk of the Child.—Since the practice of turning the child and delivering by the feet, and the late improvement of obstetrical instruments, this operation has never been performed on account of position, monstrosity, or any other obstacle on the part of the child merely. It will be obvious, however, that the increased bulk of the fœtus combined with distorted pelvis, will render the delivery proportionally difficult and dangerous; and though we may, from a concurrence of fortunate circumstances, be enabled to perform the extraction by embryulcia in a pelvis somewhat less than the dimensions mentioned in Dr KELLIE's case formerly referred to †, the difference in the bulk of the child may render it impracticable where the aperture of the pelvis somewhat exceeds it.

† *Vide* page 322.

Upon the whole, when, by a careful menſuration with the fingers, the pelvis appears to be faulty to ſuch a degree as to refuſe paſſage to the diminiſhed ſize of the child's head by embryulcia, and there is no proſpect of accompliſhing delivery by the new operation of dividing the ſymphyſis pubis by inciſion; in other words, when it appears abſolutely impoſſible to deliver the woman by any other means, which is to be determined by a conſultation of experienced practitioners; we ought *then only* to employ the dreadful expedient of cutting into the uterus to extract the child.

That this operation, frightful and hazardous as it moſt certainly is, has actually been performed with ſucceſs in a variety of caſes, the writings of ſeveral authors of character afford the moſt unqueſtionable evidence*.

We have reaſon, however, to ſuſpect, that the facts related in thoſe hiſtories have been miſrepreſented, or the event of the opera-

* See the authors already quoted.

operation in Great Britain ought not to have been so universally fatal. For, though performed under all the advantages of the improved state of surgery, which is the boast of the present age, the unhappy patient hath not survived it in a single instance *. In Edinburgh the Cæsarian

section

* Having been an eye-witness to the operation, and an assistant to the operator Mr CHALMER, the last time it was performed here, as the case was circumstantially related in the last Edition of this Work, we have again thought it necessary to insert the history.

ELISABETH CLERK, aged thirty, had been married for several years, became pregnant, and miscarried in the third month; the expulsion of the abortion occasioned so severe a stress, as actually to lacerate the perinæum. Some time after her recovery, she was irregular; afterwards had one show of the menses; again conceived; and the child, as she imagined, arrived at full time. She was attacked, on Monday the 3d January 1774, about midnight, with labour-pains; which went on slowly, gradually increasing till Saturday the 15th, when she was brought from the country to the Royal Infirmary here Upon examination, the pelvis seemed considerably distorted; but the body was otherwise well shaped, tho' of small size.. The os externum vaginæ was entirely

ſection has been performed five times, viz. twice by Dr Young, once by Mr Robert Smith,

ly ſhut up; nor could any veſtige of vagina be obſerved, nor any appearance of labia pudendorum: Inſtead of theſe, there was a ſmall aperture at the ſuperior part of the vulva, immediately under the mons veneris, probably about the middle anterior part of the ſymphyſis pubis. This aperture (which had a ſmall proceſs on the ſuperior part, ſomewhat reſembling the clitoris) was no larger than juſt to allow the introduction of a finger; the meatus urinarius lay concealed within it. A conſultation of Surgeons was called, and the Cæſarean ſection was determined on. Having had no ſtool nor voided any urine for two days, an injection was attempted to be thrown up; but it did not paſs, nor was it poſſible to puſh the female catheter into the bladder. At ſix in the evening, the operator made an inciſion on the left ſide of the abdomen in the ordinary way, through the integuments, till the peritonæum was expoſed: two ſmall arteries ſprung, which were ſoon ſtopped by a ſlight compreſſion: the wound was then continued through the peritonæum into the cavity of the abdomen; when the bladder appeared ſlightly inflamed, and much diſtended, reaching with its fundus near as far as the ſcrobiculus cordis. Another unſucceſsful attempt was made to paſs the female catheter: at length a male catheter was procured, which was, after ſome difficulty, introduced into the bladder; and the urine evacuated

SMITH, once by Mr ALEXANDER WOOD, and once by Mr W. CHALMERS, Surgeons.

evacuated to the quantity of above four pounds, high ſmelled and fetid. This occaſioned a neceſſary interruption, for a few minutes, between making the opening into the abdomen and uterus: the bladder collapſing, the uterus, which before lay concealed, now came in view; through which an inciſion was made, and a ſtout male child was extracted alive; and immediately afterwards the ſecundines. The uterus contracted rapidly. After cleanſing the wound, the lips were brought together by the quill-ſuture, and dreſſed ſuperficially. The patient ſupported the operation with ſurpriſing courage and reſolution; and no more than five or ſix ounces of blood were loſt on the occaſion.

Being laid in bed, ſhe complained of ſickneſs, and had a ſlight fit of vomiting; but, by means of an anodyne, theſe ſymptoms ſoon abated. She was affected with univerſal coldneſs over her body; which alſo abated, on the application of warm irons to the feet. She then became eaſy, and ſlept for four or five hours. Next morning, the 16th, about two o'clock, ſhe complained of conſiderable pain in the oppoſite ſide: for which ſhe was blooded, and an injection was given, but without effect; for the pain increaſed, ſtretching from the right ſide to the ſcrobiculus cordis; nor did fomentations ſeem to relieve her: her pulſe became frequent, ſhe was hot, and complained of drought.

It was alſo performed by Mr W. WHYTE Surgeon in Glaſgow, October 1775: Both mother

At 7 A. M. the injection was repeated, but with no better ſucceſs; and eight ounces more of blood were taken from the arm. A third injection ſtill failed to evacuate any fæces; the drought increaſed; and the pulſe roſe to 128 ſtrokes in a minute. At 11 A. M. the pulſe became fuller, and the reſpiration much oppreſſed. No ſtool nor urine paſſed ſince the operation. At 12 ſhe was blooded again, when the ſizineſs appeared leſs than formerly. She now took a ſolution of ſal Glauberi, manna, and cr. tart. at ſhort intervals; ſhe vomited a little after the laſt doſe, had a ſoft ſtool, and voided a ſmall quantity of urine. At 3 P. M. her pulſe was 136; and ſhe had another ſtool, when thin fæces were evacuated: ſhe was then ordered two ſpoonfuls of a cordial anodyne mixture every ſecond hour. The vomiting now abated; the pulſe became ſmaller and more frequent: ſhe paſſed urine freely; but the pain and oppreſſed breathing increaſed. At 7 P. M. her pulſe roſe to 142, and became weak and fluttering; ſhe called for bread, and ſwallowed a little with ſome difficulty; her drought was intenſe; the dyſpnœa ſtill increaſed. She was now much oppreſſed, began to toſs; the pulſe ſunk, and became imper-

N. B. From the inaccuracy of the Clerk of the Infirmary, from whom the outlines of the caſe were received, an extraordinary blooding, mentioned in the Elements of Midwifery, was related by miſtake.

mother and child died. And three times in England.

Quæritur, To what cause is the unsuccessful event of this operation to be imputed?

When it proves fatal, to what immediate cause are we to ascribe the death of the patient?

Are lacerations of the gravid uterus, when that organ is previously in an inflamed state, along with the consequences of pressure from the fœtus on the irritable viscera, *not* universally mortal?

imperceptible: she complained of faintishness; but on belching wind, her breathing was relieved, and the pulse returned, growing fuller and stronger. The pain of the side still increased; two glysters of warm water with oil were then injected without effect. At 8 P. M. the pulse became less frequent and smaller; she complained much of the pain towards the scrobiculus cordis; her breathing was much oppressed; her belly was tense, and swelled as big as before the operation; her pulse was now small and feeble; she looked ghastly; and expired a little after eight, twenty-six hours after the operation.

It is to be regretted that the relations would not permit the body to be opened.

Why, therefore, ſhould a recent wound through the teguments, peritonæum, and uterus, be fatal in almoſt every inſtance *?

Is

* About four years ago, in a caſe where the ſhoulder of the child had preſented in an oblique direction at the brim of the pelvis, the labour had been permitted to go on from the morning to the afternoon; the midwife had miſtaken the preſenting part for the breech; and the pains, after a few hours, became ſo ſtrong and forcing, that ſhe expected the child to be propelled with every throe. The patient ſoon after became reſtleſs; toſſing and delirium enſued.

In this ſituation I was called in. When the patient was properly ſecured by aſſiſtants, I paſſed up my hand with difficulty, and diſcovered a conſiderable rent in the uterus towards the ſuperior lateral part of the cervix, through which the ſhoulder and arm of the child had eſcaped into the cavity of the abdomen. Every attempt to inſinuate the hand ſo high as to reach one or both feet, with a view to bring them down and deliver, brought on an impetuous guſh of blood. I was therefore obliged to deliver with the crotchet; and more readily adopted this method, as there was little reaſon to expect, from the hiſtory of the caſe, that the child was alive; it really appeared to have died the day before. After the feet and body were extracted, the firſt arm was readily relieved; but, in bringing down the other, though

Is it nervous or uterine irritation from cutting that kills? is it internal hemorrhagy, or the extravasation of fluids into the cavity of the abdomen? Is it increased irritation from pregnancy, the low exhausted state of the patient, along with dread and apprehension? Or, are not the fatal consequences rather to be chiefly imputed, as *Dr*

though every possible precaution was employed, the wound in the uterus was increased downwards to the very edge of the os tincæ.

The placenta was removed by the introduction of the hand into the uterus, on account of flooding; and some portion of intestine reduced, which had been forced through the wound of the uterus, and protruded at the vagina almost as far as the os externum. This gave me an opportunity of examining the rupture, which I found already amazingly diminished by the contraction of the uterus.

I give the patient an opiate, and took my leave; not expecting again to have seen her in life. She slept comfortably that night; complained for a few days of an uneasy sensation like after-pains; on the fifth day matter in considerable quantity appeared on the cloths at the pudendum, but without much pain. The discharge gradually lessened, and her recovery otherwise was nearly as good as if no extraordinary accident had happened.

Dr Monro thinks, to the acceſs of the air on the irritable viſcera?

The Doctor, after making numerous experiments on different animals, found, that

"If a large wound into the abdomen "be quickly cloſed and accurately ſtitch-"ed, the animal generally recovers, with-"out ſymptoms of danger appearing: but, "if the bowels are expoſed for a number "of minutes to the cold air, dreadful pain "and inflammation ſucceed, which ge-"nerally prove fatal;" and, on examining the abdomen after death, he found "effu-"ſion of bloody ſerum, and adheſion of "the bowels to each other."

He therefore has propoſed, for twelve years paſt, in his Lectures, "that, in per-"forming the Cæſarean operation, we "ſhould be careful that the viſcera be "expoſed as little as poſſible; and that "the ſides of the wound ſhould be kept "contiguous by a greater number of "ſtitches than are commonly employed

in

"in wounds, in order to exclude the air "from the cavity of the abdomen *."

The particular method of performing the operation is described so satisfactorily by Dr Monro, our learned and accurate Professor, in his Lectures, that we shall take the liberty to insert his own words.

"By this operation is understood, an incision made first into the cavity of the abdomen, and then into the uterus, in order "to extract a fœtus. If the person on whom "we are to perform it has been killed by an "accident in the last month of pregnancy, "or has died of a fever, we need not be "very exact about the incision, but must "make it as quickly as possible.

"If, however, we are to operate on a "living person, we ought not to attempt "the operation if she has ever on any former occasion been delivered of a child; for

* In the imperfect Edition of the Elements of Midwifery, from the inaccuracy of the language this opinion appears to have been given as my own. I readily make this acknowledgment of Dr Monro's claim, as I should otherwise detract from his deserved praises.

"for that is a ſure proof that the natural "opening is ſufficiently large*. Even if the "os uteri be not fully dilated, it will be "better for the patient to have it dilated "forcibly, than to have this operation per- "formed, which is attended with the moſt "imminent danger."

"Next, we ought ſtrictly to examine the "ſtate of the bones and of the ſoft parts, "leſt we imagine that the bones prevent "the delivery; when, perhaps, the ſoft "parts only may be in the fault. We may "alſo preſume, that there is a ſufficient "wideneſs in the bones of the pelvis if the "patient is not obſerved to have deformity "in the other parts of the body, as a de- "formity rarely occurs in the pelvis with- "out rickets or a curvature in the ſpine; "though in a few caſes this may happen. "But, after all theſe circumſtances have "been attended to, and the operation is "determined,

* The caſe of the Cæſarean operation mentioned in the London Medical Obſervations and Inquiries, Vol. V. is an exception to the general rule; but examples of this kind very rarely occur.

" determined; next let us consider the pro-
" per steps to be taken in it.

" We first empty the intestines, the rec-
" tum, and vesica urinaria, that the patient
" may not be disturbed too soon after the
" operation, and that the size of the blad-
" der may not interrupt it. We then lay
" the patient in a horizontal posture, that
" the intestines be not pushed down be-
" tween the abdominal integuments and
" uterus. In making the incision, we must
" avoid the large arteries in the contain-
" ing parts. If it were to be extended far
" outwards, considerable branches of the
" circumflex might be divided; if inwards,
" the epigastric: so the best place is be-
" tween the recti muscles, or upon the out-
" side of the rectus. The last place is most
" frequently preferred, and we there readily
" get into the uterus. By this means, indeed,
" the uterus must be divided towards its
" side, where the vessels enter and are most
" considerable; but we choose the outside
" of the rectus, because of the vesica uri-
" naria being in danger of contracting in-
" flammation

" flammation from the incision. Except " the danger of wounding the small turns " of the intestines, there is no great diffi- " culty in performing the operation; yet " several cautions are to be observed. Ope- " rators have not been aware of the causes " of the danger; and we have more fa- " vourable accounts of the operation than " we ought to have. We shall find in " practice, that we shall be more frequently " disappointed than we would imagine from " the reports of authors who have only " mentioned the fortunate cases. In this " city the operation has been performed five " times, and always without success; tho' " some of the women, before the opera- " tion, were in ordinary health. The great " danger, I am persuaded, arises from the " admission of the air, as well as from the " parts divided; and I have repeatedly " found, in making experiments upon ani- " mals, that if the air were let in upon the " abdominal bowels for a few minutes, " without any farther injury, the animal " often dies, and always recovers with the

" utmost difficulty: And this still more " readily happens if a considerable quan- " tity of red blood be extravasated within " the cavity, which produces a most vio- " lent inflammation. Therefore the sur- " geon is not to go at once into the cavity " of the abdomen; but should first divide " the skin and muscles, and leave the pe- " ritonæum entire until the bleeding from " the vessels has entirely ceased: the dan- " ger in that way, I find, is very much les- " sened. We then open the peritonæum, " making first a small incision, and observe " if the uterus is contiguous: if it is, we " divide it with caution; and the assistant, " by making a moderate pressure, hinders " the air from getting into the general ca- " vity of the abdomen. The discharge of " blood from the uterus is smaller than we " would expect. We then cut the mem- " branes, separate the placenta to extract " the fœtus, discharge the waters; and, as " soon as the fœtus and secundines are " removed, the uterus contracts of itself. " Then let the surgeon pass his hand into

" the

" the cavity of the uterus, and with one " or two fingers open the os uteri, that the " blood, naturally difcharging into the ca- " vity of the uterus from the wound, may " pafs readily out by the vagina. We then " fhut the wound; and, inftead of leaving " an opening for the difcharge of matter, " we truft to abforption; for I conftantly " find, that a very clofe future contributes " to the cure: fo I would few the contain- " ing parts of the abdomen with the glover's " ftitch, or interrupted futures at $\frac{3}{4}$ths of " an inch diftance, making the needles pafs " through the fkin and part of the mufcles, " bu not within the cavity, leaving the pe- " ritonæum entire; or, if there is a con- " fiderable effufion of blood and water, let " us ftitch all but the under-part, intro- " duce into it a foft tent, and cover the " whole with a comprefs. The patient is " to be kept on a ftrict antiphlogiftic regi- " men during the cure."

CHAP. III.

Preternatural Labours.

LABOURS are ſtyled *Preternatural*, "when any part of the child's body, "except the head, preſents, or is firſt felt "by the finger, at the mouth of the womb."

We have already ſaid, that, in the moſt natural poſition, the top of the head preſents; but the feet and breech often firſt appear, and the child is delivered in that manner. In other caſes of preternatural preſentation, the poſition muſt be altered; and the child, in the language of midwifery, is then ſaid to be *turned.*

The cauſes of preternatural labours probably are,

The motion and ſtirrings of the fœtus, either naturally, or from ſhocks affecting the mother. For, in the early months, the fœtus having once altered its poſition, may be prevented from recovering it by folds of the chord round its body and limbs; and, in advanced geſtation, if the breech ſhould get undermoſt inſtead of the head, the child will with difficulty be reſtored to its proper poſition, as the quantity of water is conſtantly decreaſing, and the child becoming more bulky.

The poſition of the child in the womb may be alſo influenced by its particular figure and conſtruction; the quantity of ſurrounding water, the length of the chord, the manner of ſtretching of the womb, the ſhape of the baſin, and a variety of other circumſtances.

We can ſometimes diſcover that the child preſents in an unfavourable poſition, even when the labour is but little advanced.—We ſuſpect it,

1*ſt*, If the pains be more ſlack and trifling than uſual.

2dly, If

2dly, If the membranes be protruded in a long form, like a gut, or the finger of a glove.

3dly, If no part of the child can be felt when the orifice of the womb is confiderably opened; or,

4thly, If the prefenting part, through the membranes, be fmaller, feels lighter, and gives lefs refiftance, when touched, than the bulky heavy head.

It can with more certainty be afcertained after the membranes are ruptured, by feeling diftinctly the prefenting part. If the child's ftools be paffed with the waters, it is a fign either that the breech prefents, or that the child has been for fome time dead; though there are fome exceptions to this rule.

Preternatural labours are difficult of delivery, or hazardous, from,

1ft, The health and conftitution of the woman, and figure and dimenfions of the pelvis.

2*dly*, The bulk of the child's body, and manner of preſenting.

3*dly*, The time which has paſſed ſince the waters were evacuated; for, if that has been long, the womb is more ſtrongly contracted, and the preſenting part puſhed on, and more firmly locked in the pelvis.

4*thly*, From a plurality of children; from the chord falling down before the preſenting part; being entangled with its limbs; or from profuſe flooding.

The variety of preternatural poſitions may be reduced to the following claſſes.

I. When one or both of the lower extremities preſent; as one or both feet, knees, or the breech.

II. When the child lies croſs the pelvis in a rounded or oval form, with the arm, ſhoulder, ſide, back, or belly, preſenting.

III. One or both arms protruded before the head.

IV. Pre-

IV. Premature or flooding cafes, or where the navel-ftring falls down double before the prefenting part, and the child's life is in danger from its compreffion.

Each clafs of this general divifion includes a variety of particular cafes. By giving a few examples of each clafs, a general idea of the manner of treating the whole will be formed.—It is, however, neceffary to obferve, that, though delivery, in fome preternatural cafes, may be eafy, it is always precarious, and often difficult.

CLASS I.

When one or both Feet, Knees, or the Breech, prefent.

CASE I.

THE fimpleft and eafieft cafe of preternatural labour is fuppofed to be, *when the child prefents with the feet:* but there is fometimes danger left the head fhould be retained after the delivery of the body,

which is leſs when the child preſents double; though, even in that poſition, a firſt child frequently loſes its life.

We are often able to diſcern the preſenting part long before the membranes break, and it is of great conſequence to diſcover early how the child lies; but, in making the neceſſary examination, care muſt be taken not to preſs the finger againſt the membranes in time of a pain. When the preſenting part is at a diſtance, or the poſition of the child appears doubtful or obſcure, the woman ſhould be ſhifted from her ſide to her back, examined in a ſitting poſture at the pubes where the pelvis is ſhallow, or on her knees. A hand is often miſtaken for a foot; but the latter may be readily diſtinguiſhed from the former by the weight and reſiſtance it gives to the touch, by the ſhortneſs of the toes, and the length of the heel.

When one or both feet preſent in the paſſage, little more ought to be done than if the labour were ſtrictly natural, till the orifice of the womb be ſufficiently dilated, and

the prefenting part advanced at or without the os externum. The woman muft then be placed either on her fide, with the breech over the edge of the bed, and her head obliquely to the oppofite fide; or, on her back crofs the bed, fupported by an affiftant in the bed to raife her head and fhoulders, and an affiftant at either fide of the bed on a low feat, whofe office is to fecure the woman's feet, to feparate her knees, and prevent her from fhifting. When any difficulty in extracting the head may be fufpected, or when the practitioner is not very dexterous in the art, the latter pofture is preferable. It is alfo, in general, for young practitioners, the beft pofition, in all thofe cafes where it is neceffary to pafs the hand into the uterus, to make the delivery by turning the child.

When the parts are thus fufficiently open, or the feet, by the force of repeated pains, at, or protruded without, the orifice of the vagina, the operator may then take hold, firft of one leg, grafping it firmly above the ankle, and gently endeavouring to pull

it down in the time of a pain, not in a ftraight line, but from fide to fide, or from pubes to facrum: when the pain remits, a warm cloth is to be applied to the os externum, and the return of the pain fhould be waited for. The other leg is then to be taken hold of and pulled down in the fame gradual gentle manner with the former: by pulling alternately firft by one foot, then by the other, there is lefs hazard of injuring the uterus, than if an attempt were made to bring down both feet at once; and the paffages, being thus gradually ftretched, will be better prepared for the delivery of the bulky fhoulders and head.

When the feet are fufficiently advanced for it, a warm cloth fhould be wrapped round them; which will enable the operator to take a firmer hold, and defend the child from the hazard of injury by the extraction. But the cloth fhould be fo applied, as to leave the toes expofed; for they are the proper direction for turning the body. If they already point to the facrum, the child is to be brought along in the

fame

ſame direction, till it ſtops from the reſiſtance of the ſhoulders. But if, inſtead of pointing backwards, the toes ſhould point to the ſide or belly, the child's body muſt be gradually turned, till the belly be applied to the back of the mother, and the back of the child to the mother's pubes.

The proper time to begin to turn, is a little before the breech advances to the os externum. The turn ſhould not be made all at once, but gradually; the child's body muſt be firmly graſped with both hands, puſhing a little upwards, then turning to one ſide in time of the pain, carefully obſerving and favouring that line of direction which the child naturally inclines to take. The attempt muſt be repeated during every pain, till the child's body be turned round, and the face applied to the ſacrum of the mother. The motions of the child's head and body do not always exactly correſpond. Therefore, after the belly of the child preſſes againſt the perinæum of the mother, a quarter-turn extraordinary is ſtill neceſſary, which muſt

again be reverſed before the operator begins to extract. By that means the arm will be prevented from getting under the face, the broad ſhoulders will be applied to the wideſt diameter of the pelvis, the face will be turned towards the angle of the ſacrum, and readily follow in that direction.

When the breech is entirely protruded without the os externum, the child muſt be taken hold of by graſping firmly with the thumbs above the haunches, and the fingers ſpread over the groins; the extraction muſt be gradually performed, moving from ſide to ſide, preſſing a little downwards towards the peinæum, and waiting for natural pains, or reſting from time to time. As the belly advances, the operator muſt ſlide up his hand, or two fingers, and very gently draw down a little the umbilical chord, leſt, being tenſe and overſtretched, the circulation might be interrupted, and the life of the child deſtroyed, which often happens where this precaution is neglected.

After the breech is protruded, and the navel-ſtring begins to be compreſſed, from the os tincæ graſping it like a ring, the delivery muſt be conducted with all the expedition that the mother's ſafety will admit of. When the child is advanced as far as the breaſt, its farther progreſs is prevented by the arms going up by the ſides of the head. This obſtacle muſt be removed in this manner: The child's body ought to be ſupported by the left-hand of the operator, which muſt be paſſed under the breaſt of the child, in ſuch a manner that the child may reſt on the palm and arm of that hand; the child muſt then be drawn a little to one ſide, that two or more fingers of the right-hand may be paſſed at the oppoſite ſide into the pelvis, over the back of the ſhoulder, as far as the elbow, to bring down the arm obliquely along the breaſt, gently bending it at the fore-arm, in ſuch a manner as to favour the natural motions of the joint. Having then ſhifted hands, the other arm muſt be diſengaged, and brought down in the ſame manner.

Both

Both arms of the child being relieved, the woman may be allowed to reſt a little till another pain or two follow; when, by bearing down in the time of the pain, the head will generally be forced down and delivered. But, if the woman be much exhauſted, and the head does not quickly follow, the child will be loſt from the preſſure of the navel-ſtring.

The pulſation of the arteries in the chord ſhould regulate the time for extracting the head: while the pulſation is ſtrong, there is no hazard from delay; if the pulſation be weak or languid, more eſpecially if the chord begins to be cold and flaccid, the extraction muſt be quickly performed, otherwiſe the child will be deſtroyed.

The extraction of the head in preternatural labours, is often the moſt difficult and dangerous part of the delivery. The cauſe of reſiſtance, when it does not advance, is chiefly owing to its confinement between the ſacrum and pubes, when the bulky part of the head is detained at the brim, or at the lower part, by the chin catching on the

the ſacro-ſciatic ligaments. The method of delivery is to introduce two fingers of the right-hand (which hand and arm at the ſame time muſt ſupport the body of the child) into the mouth, and pull down the jaw towards the breaſt; then applying the other hand with the fingers ſpread, ſo as to preſs down the ſhoulders, the operator muſt riſe from his ſeat, and pull in a direction from pubes to ſacrum with conſiderable force, alternately raiſing and depreſſing the head till it begins to yield, ſo that, the chin being conſtantly preſſed to the breaſt, the face will deſcend from the hollow of the ſacrum: the delivery muſt then be finiſhed, by bringing the hind-head from under the pubes with a half-round turn.

During theſe efforts, an aſſiſtant muſt be directed to preſs on the perinæum; and, whenever the circumſtances of the caſe will admit of it, the exertions of the operator ſhould coincide with the natural throes of labour, by which the extraction will be greatly facilitated.

If the poſition be unfavourable, the face, if poſſible, ſhould be turned towards the ſacrum, by puſhing up the head, or by preſſing on the chin; if the mouth cannot be reached, the preſſure ſhould be made anywhere on the lower-jaw; if the difficulty ariſes from folds of the chord round the legs, thighs, body, or neck of the child, theſe muſt be diſengaged in the eaſieſt manner poſſible. The contraction of the orificium uteri round the child's neck rarely proves the cauſe of reſiſtance, except when the feet are pulled down too early, or in premature labours, when it may be gently ſtretched with the fingers, and further endeavours ſhould be delayed for ſome time.

If the head does not yield after repeated efforts, in the manner directed, there is a neceſſity for reſting ſome time; as the head does not ſo ſoon collapſe, and mould itſelf to the paſſage, in preternatural as in natural preſentations. Whatever obſtacle prevents it from advancing, it will ſtill be prudent to reſt for a little; and, after a proper

proper interval, renew our exertions: by thus alternately refting, and attempting to extract, the head will yield, and the child may be faved, after a confiderable exertion of force has been ufed.

If the caufe of refiftance appears to be the extraordinary bulk of the head from hydrocephalus, the teguments may be burfted by the force of pulling, by thrufting a finger through them, or by perforating the cranium with the long fciffars.

If, by the violent exertions employed, there is hazard of diflocating the cervical vertebræ, and of feparating the body from the head, the operator muft cautioufly defift from pulling, and wait for the contractions of the uterus, employing his exertions during the time of the pains only.

If the head is of a monftrous fize, or the pelvis very faulty, the former muft be opened with the fciffars at the bafis of the fkull, and the extraction afterwards performed with the crotchet.

The fingers of the operator introduced into the mouth, or preffing on the upper

or

or lower-jaw, will be ſufficient to accompliſh the extraction of the head, where there is no great diſproportion between it and the pelvis; ſo that the forceps will ſeldom be neceſſary. In more difficult caſes, the crotchet muſt be uſed.

Caſe 2. *When one foot only is protruded into the Vagina*, the other is ſometimes detained by catching on the pubes, and, if eaſily come at, ſhould be brought down, always obſerving to humour the natural motion of the joint; but, if the leg ſhould be folded up along the child's body, or of difficult acceſs, the attempt is not only troubleſome, but dangerous, as there is hazard of tearing the uterus. It is leſs neceſſary, as the breech will be either naturally forced down by the aſſiſtance of pains, or by gently pulling at one leg only.

Caſe 3. *When one or both knees preſent*, the legs often cannot be brought down, till the breech be gently raiſed and puſhed a little back in the pelvis.

Caſe 4. *If the feet ſhould offer along with the breech*, it muſt be cautiouſly thruſt back, while the former are ſecured and brought down, till the poſition be reduced to a footling caſe, and the delivery otherwiſe managed as already directed.

Caſe 5. *The Breech.*

The varieties of the breech are,

1*ſt*, The fore-parts of the child placed to the pubes of the mother;

2*dly*, To the ſacrum;

3*dly*, To either ſide.

Sometimes the poſition of the breech may be diſcovered before the membranes break; but afterwards with more certainty, by the meconium of the child accompanying the waters; and by feeling the buttocks, thighs, or genitals of the child to the touch.

In whatever manner the breech preſents, the delivery ſhould be ſubmitted to nature, till the child be advanced ſo far, that the feet can be laid hold of and brought down.

If the fore-parts of the child be already placed towards the ſacrum of the mother, nothing elſe is neceſſary but to ſupport the child till it advances ſo low, by the force of the natural pains, that the feet can be readily and ſafely brought down.

If the fore-parts of the child be placed anteriorly or laterally to the mother, when the child is ſo far advanced that it can be laid hold of and wrapped in a cloth, the mechanical turns muſt be made, and the delivery finiſhed, as directed in footling-caſes.

There is much leſs hazard, in general, in allowing the child to advance double, than in precipitating the extraction, by puſhing up to bring down the feet, before the parts have been ſufficiently dilated: a practice difficult and troubleſome to the operator; painful, and ſometimes dangerous, to the mother; and by which the child is expoſed to the riſk of ſtrangulation, from the retention of the head after the delivery of the body. If the child be ſmall, though doubled, it will eaſily paſs in that direction;

if

if large, though the labour ſhould be painful, the natural throes are leſs violent and dangerous than the pain occaſioned, firſt, by introducing the hand with a view to turn; and, 2dly, by puſhing up the child in order to lay hold of the feet and bring them down. If the child advances naturally, it will be leſs expoſed to ſuffer; if it ſhould not advance, there is this advantage, that the parts of the mother will be properly prepared, when the ſtrong pains are abated, for paſſing the hand into the pelvis, to raiſe up the breech, ſearch for the feet, bring down one or both, and deliver.

The propriety of this mode of treatment is ſupported by the pains being often ſtronger in breech-caſes than in natural labour: but it cannot be followed when the mother is weak, and the pains are trifling; when ſhe is affected with floodings or convulſions; when the child is of a very large ſize, or the pelvis narrow; when the umbilical cord falls down, and is compreſſed between the thighs of the child, or between

the child and the pelvis, and cannot be reduced above the preſenting part.

The prolapſus of the navel-ſtring generally accompanies that poſition of the breech, where the child preſents with its fore-parts to the belly of the mother. Sometimes the cord can be reduced, and the child's life preſerved: but, if the breech be far advanced, and the pains ſtrong, it is not only difficult, but hazardous, to puſh up the child; who can ſeldom, in ſuch circumſtances, be preſerved. It is better, therefore, to let the child come as it will, if there are pains, rather than hazard the more important life of the mother, by attempting to puſh up and turn it. But, in all doubtful and perplexing caſes, when there is time for it, the advice of a more ſkilful practitioner ought to be taken.

When the breech is ſo far advanced, that a finger or two can be paſſed under the bended thigh, as far as the groin of the child, aſſiſtance may be given with advantage, by alternately pulling, firſt at one ſide, then at the other, in time of the pain.

pain. But great care ought to be taken not to miſtake the ſhoulder for the breech, and not to injure the child by violent pulling, or unequal preſſure. Such errors have often been committed, and the conſequences have been fatal.

In breech-caſes, the greateſt caution is neceſſary, when the genital parts preſent, leſt the child ſhould be injured by too frequent touching.

CLASS II.

When the Child lies croſs in a rounded or oval form, with the Arm, Shoulder, Side, Back, or Belly, preſenting.

IN the former claſs, though the birth may ſometimes, when the child is ſmall, be accompliſhed without manual aſſiſtance; when the child lies acroſs, no force of pain can make it advance in that poſition; and without proper aid, both mother and child would periſh.

If a ſkilful practitioner hath the ma-

 nagement

nagement of the labour from the beginning, the child may generally be turned, in the worst position, without much difficulty: but, when the waters have been for some time evacuated, and the uterus is strongly contracted round the child's body, turning will be difficult and laborious to the operator; painful, and even dangerous, to the mother. For it ought to be considered, that the great difficulty and hazard of turning, are chiefly owing to the resistance which the uterus gives; not so much to the position of the fœtus. When the water, in whole, or in part, is retained, there is easy access to reach the feet and bring them down; but, in proportion as the water is evacuated, the uterine cavity becomes less spacious, and turning is rendered both troublesome and dangerous. It was the old practice, in preternatural labours, to endeavour to make the head present; but, on account of its bulk, it could seldom be done, and the force employed in making the attempt was often attended with fatal consequences. The method of delivering by the

feet

feet is the moft important modern improvement in the practice of midwifery; an improvement to which many thoufands owe their lives.

When the child lies in a tranfverfe pofition, the management is very fimple. We muft gently pafs the hand into the uterus, to fearch for the feet, bring them down with the utmoft caution, and finifh the delivery as directed in footling-cafes; for which purpofe the following rules fhould be obferved.

Rules for turning the CHILD.

1. The woman muft be placed in a convenient pofture, and kept fteady by affiftants, that the operator may be able to employ either hand, as the circumftances of the cafe may require.

2. Though the beft pofture for the operator, in general, as well as the patient, is the left fide, with her breech placed over the edge of the bed, and her knees kept feparate with a folded pillow, it will be fometimes

neceſſary to turn her to her back; and in thoſe caſes where the child's feet are of difficult acceſs, or where they lie towards the fundus uteri, the woman ſhould be placed on her knees and elbows.

3. The orificium uteri ſhould be enlarged ſo much as to admit the hand to paſs freely; and the ſtrong pains ſhould be abated, before any attempt be made to deliver.

4. It is of great conſequence to endeavour to learn the poſition of the child, and to attend to the ſhape and dimenſions of the pelvis, before attempting to make the delivery.

5. In preternatural caſes, every poſſible means ought to be uſed to preſerve the membranes as long as poſſible. If they ſhould break before the hand is introduced, and the ſtate of the parts will admit of it, the hand ſhould be quickly after paſſed; part of the water being thus retained, the operation of turning will be greatly facilitated. But, if the waters be drained off, and the uterus rigidly contracted round the body

body of the child, warm oil ſhould be injected into the uterus, to leſſen the rigidity of the parts, and a full doſe of laudanum ſhould be exhibited, previous to any attempt to procure delivery.

6. The hand and arm of the operator muſt be lubricated with pomatum, before attempting to introduce it into the vagina; the fingers muſt be gathered together in a conical form, and the reſiſtance of the os externum be overcome by very ſlow and gradual degrees.

7. In paſſing the hand into the uterus, it ought to be done in the gentleſt manner, but with a certain degree of reſolution and courage. The paſſages ſhould be well lubricated with butter, or pomatum; the line of the vagina and pelvis carefully attended to; the movements of the operator muſt be ſlow and gradual; and thus, by giving time, the utmoſt rigidity in the ſoft parts may be overcome.

8. The hand ought to be introduced only during the remiſſion of pain; when the pain comes, the operator ſhould ſtop,

ſtop, otherwiſe there is great hazard of puſhing the hand, or ſome part of the child, through the ſubſtance of the uterus.

9. The hand ſhould, if poſſible, be introduced by the fore parts of the child, as the feet are generally folded along the belly; and both feet, if eaſily come at, ſhould be laid hold of.

10. In puſhing back any part of the body of the child to come at the feet, the palm of the hand, or broad expanded fingers, muſt be uſed. This part of the operation ſhould be performed always during the remiſſion of pain, which ſhould alſo be obſerved in bringing down the legs; but in making the extraction of the body, when the legs are in the proper line of direction, the efforts of the artiſt ought always to co-operate with thoſe of Nature.

11. As the breech advances through the pelvis, the child, if not already in the proper poſition, muſt be gradually turned with the fore-parts poſteriorly to the mother.

12. Practi-

12. Practitioners in midwifery ſhould be cautious of giving credit to any report of the child's death; for moſt of the ſymptoms are fallacious. Children are often born alive when there is little reaſon to expect it: Therefore, in puſhing up, bringing down the legs, or extracting the body, the child ſhould never be treated roughly, but handled with the greateſt delicacy.

13. When the hand is within the pelvis, and there is a neceſſity for paſſing it pretty high in the uterus to ſearch for the child's feet, the proper direction is not preciſely in the line of the navel, as Dr SMELLIE adviſes; but inclining it a little to one ſide, to avoid the prominent angle of the ſacrum, by which more room will be gained, and leſs pain given to the woman; for the womb preſſes ſtrongly there.

14. When the hand is interrupted in paſſing, by the ſpaſmodic contraction of the uterus, we muſt deſiſt from further inſinuation, till the conſtriction of the uterus is ſomewhat abated.

15. If

15. If the hand cannot paſs beyond the preſenting part of the child to come at the feet, inſtead of thruſting back the preſenting part with violence, it ſhould be, as it were, firſt raiſed up in the pelvis, and then moved to the oppoſite ſide. By this means, difficulties, otherwiſe inſurmountable, may be removed, and great danger often prevented.

16. When both feet cannot readily be obtained, the foot and leg of the preſenting part ſhould be endeavoured to be firſt brought down. Hence more room will be procured for ſearching for the other foot, and the extraction will be performed with more eaſe and ſafety.

17. If the ſecond foot cannot readily be found or brought down, the child may be extracted with the utmoſt ſafety by one foot only, provided we proceed ſlowly in the operation.

18. When the foot or feet begin to protrude without the os externum, let them be covered with a ſoft cloth, and the advantage

vantage of the natural pains improved to aſſiſt the extraction.

19. In all preternatural labours, when the child is delivered as far as the breech, the ſtricture of the navel-ſtring ſhould be removed, by gently drawing it down a little, as already directed.

20. As the breech advances towards the os externum, the proper means for guarding againſt laceration of the perinæum muſt be attended to.

21. The arms are to be relieved, and the head extracted, in the manner already directed in footling-caſes.

22. Children delivered by the feet, are not only often ſtill-born, but the body is ſometimes ſeparated from the neck, and the head left behind in the cavity of the uterus; an accident which can only happen by the raſhneſs, negligence, or unſkilfulneſs, of the practitioner.

The cauſes chiefly are, 1*ſt*, The putrid ſtate of the child's body in conſequence of its death; 2*dly*, The neglect of the operator to make the proper turns when extracting

ing the body; *3dly*, The narrownefs of the pelvis, or bulk of the child's head.

To prevent it when the child's body is putrid; the operator fhould never attempt to extract the head till two fingers be introduced into the mouth; and, by pulling down the jaw, and preffing on the fhoulders, while an affiftant preffes gently on the woman's belly, and the woman herfelf bears down in the time of a pain, the extraction may generally, unlefs when the pelvis is narrow, be effected.

23. If the head fhould be actually feparated and left behind in the womb, and cannot be extracted by introducing two fingers into the mouth and waiting for the affiftance of pains, and the forceps fhould fail, the crotchet muft be ufed. The method is to keep the head fteady by the preffure of an affiftant on the woman's belly, the head is opened with the fciffars, and extracted with the crotchet according to the rules already given.

By attending carefully to the above rules, lacerations of the uterus, floodings, con-

vulſions, inflammation, and their conſequences, may be prevented, and the child's life often preſerved, even when it preſents in the moſt awkward poſition.

We proceed to conſider a few particular caſes.

Caſe 1. *The Arm preſenting.*—This poſition occurs frequently. It is of ſome conſequence to form a general notion how the child lies, before the operator ſits down to deliver. The right-hand, by a little attention, may be readily diſtinguiſhed from the left, if we lay hold of the child's hand, in the ſame manner as in ſhaking hands.

It is often in the power of a ſkilful practitioner to prevent the hand from coming down, or to reduce it when it protrudes. But, if the arm be forced into the paſſage ſo low that the ſhoulder is locked in the pelvis, it is needleſs to give the woman the pain of attempting the reduction, unleſs when the head can be made to preſent, as the hand of the operator can be paſſed into the uterus by the ſide of the

child's

child's arm, which will of course return into the uterus, when the feet are brought down into the vagina. As the head, in this caſe, cannot eaſily be made to preſent; in order, therefore, to make the delivery by turning the child, the hand and arm of the operator, well lubricated, muſt be conducted into the uterus by the ſide of the child's arm, along the breaſt and belly of the child, towards the oppoſite ſide of the pelvis, where the head lies. If any difficulty occurs in coming at the feet, the hand already introduced muſt be withdrawn, and the other paſſed in its ſtead. If ſtill the hand cannot eaſily be puſhed beyond the child's ſhoulder and head, the preſenting part muſt be gently raiſed up, or cautiouſly ſhifted to a ſide, that one or both feet may be taken hold of, which muſt be brought as low as poſſible, puſhing up the head and ſhoulders, and pulling down the feet, alternately, till they advance into the vagina, or ſo low that a nooſe or fillet can be applied; and thus, by pulling with the one hand by means of the nooſe, and puſhing

with the other, the feet can be brought down, and the delivery finifhed in the moft complicated and difficult cafes.

The method of forming the noofe is, by paffing the two ends of a piece of tape or garter through the middle when doubled; or, if the garter be thick and clumfy, by making an eye on one end, and paffing the other extremity through it. This muft be mounted on the points of the fingers and thumb of the hand of the operator, who muft take hold of the child's foot, flip it over the foot and ankle, and fecure it by pulling at the other extremity.

Cafe 2. *The Shoulder.*—Great care ought to be taken that it may not be miftaken for the buttock. The fhoulder will feel harder and more bony than the full thick flefhy hip; a mark which may be taken along with the others formerly mentioned in Breech-cafes.

Tho' the child fhould originally prefent with the fhoulder, when the orificium uteri is dilated, the arm, if not prevented, may

readily be forced by the repeated efforts of the labour-throes into the paſſage. In proportion as the preſenting part advances, and the ſhoulder becomes locked in the pelvis, delivery by turning will be more difficult and hazardous.

Except the child be of a very ſmall ſize, and the hand preſſed cloſe to the ſide of the head, it is impoſſible for the head and arm to paſs together; it is, therefore, cruel and barbarous to pull the arm in order to deliver the child in that way. The arm has been often torn from the body, and the mother has died in the attempt.

Caſe 3. *The Side.*—This is diſcovered by feeling the ribs.

Caſe 4. *The Back.*—This is diſcerned by feeling ſome part of the ſpine or backbone.

Caſe 5. *The Belly.*—It is known by the ſoft yielding ſubſtance of the part, and by the falling down of ſome portion of the umbilical cord.

Thefe three prefentations, viz. the *fide*, *back*, and *belly*, more rarely occur, as the uterus will with difficulty admit of fuch pofitions.

When any of thefe parts do prefent, they feldom advance much beyond the brim of the pelvis, and the child is in general as eafily turned as in other prefentations which more frequently occur.

The belly, from the difficulty with which the legs can be bended backwards, unlefs the child be flaccid, putrid, or before the time, will very feldom directly prefent; if it does, it will be early and eafily difcovered by the prolapfus of the chord, and there will be no great difficulty to come at the feet, and deliver.

The rule in all thefe cafes is, to infinuate the hand into the uterus, in the gentleft manner poffible, when the ftate of the parts will admit of it, to fearch for the feet, bring them down, and deliver, agreeably to the directions already given for that purpofe.

CLASS III.

One or both Arms presenting, and the Head following nearly in the same direction.

THE most difficult and laborious of the preternatural labours occur,—*When the child lies longitudinally in the uterus, with the arm or shoulder presenting, and the head more or less over the pubes, or resting on one side, at the brim of the pelvis, the feet towards the fundus uteri, the waters evacuated, and the uterus closely contracted round the child's body.*

When the arm protrudes in this manner, it ought, if possible, to be reduced, and the head brought down into the pelvis; for it is often equally difficult and dangerous to deliver by the feet, and sometimes utterly impracticable.

A skilful practitioner, having the management of the delivery from the beginning, will often be able to prevent the protrusion of the arm, which ought to be attempted as soon as possible after the rupture

of the membranes. If he fails, and the arm fhould be forced down, the earlieft opportunity fhould be taken to reduce it. If fuccefsful, it will prevent much future trouble; it will be a happy circumftance for the mother, and may be the means of preferving both her life and that of the child. With this view, when the pofition of the woman is adjufted, the hand of the operator, well lubricated, muft be infinuated thro' the vagina into the uterus, conducted by the child's arm, till it reaches as far as the axilla or fhoulder. The fhoulder muft then be raifed up, and fhifted, as it were, obliquely, to the fide of the pelvis, oppofite to that to which it inclines. By this means the pofition of the child will be fomewhat altered, and the arm drawn up within the vagina, fo that it will be afterwards no difficult tafk to reduce it completely. But, fhould this method fail, an attempt may be made to pufh up the fore-arm at the elbow; and, in bending it, great care muft be taken to avoid over-ftraining, or diflocating the joint. Thefe attempts muft only be made in the intervals of pain:

when the pain recurs, the operator ought immediately to desist; for, by pushing in time of the pain, or in an improper direction, the utetus may be torn, and the most fatal consequences soon ensue.

In whatever manner the reduction of the child's arm shall be accomplished, if any method proves successful, it must be retained in the uterus by the hand of the operator, till the child's head, by the force of the next pain, fills up the pelvis, and prevents its return; otherwise the arm will be protruded as often as it is reduced.

But, if the orificium uteri be not sufficiently opened to admit of the reduction of the protruding arm with safety; if, as the arm advances, the head reclines to one side of the pelvis, the throes of labour are violent, and the intervals short; it would then be as dangerous to the patient as difficult to the operator, to attempt delivery by manual exertions: for the spasmodic contractions of the uterus counteract every artificial effort; and if much mechanical force be used, the uterus is in hazard of actual laceration. In these circumstances, regardless

regardlefs of the anxiety of the patient, or the importunities of the attendants, the operator fhould defift for fome time from further efforts; a large dofe of liquid laudanum fhould be given, as from 50 to 70 gutts; and when the parts are fufficiently dilated, and the ftrong forcing pains abated, his attempts fhould then be renewed, either to reduce the arm, or infinuate his hand beyond it to come at the feet, bring them down, and deliver. If thefe attempts fhould fail, he may endeavour to alter the pofition of the child, by fixing a noofe on the arm, and pulling by it. More eafy accefs may be then obtained to the anterior parts of the child, by which the hand can be conducted to the feet. But, if every method fhould prove ineffectual either to reduce the arm or bring down a foot, and the woman's life is in danger, the head of the child, if it can be reached, muft be opened; after a proper interval, a crotchet introduced; and the extraction made by pulling at it and the protruded arm.

Should the head be without reach of the fciffars, the crotchet muft be fixed on the

trunk or thorax, with a view to bring down the breech or feet; by ſecuring a firm hold of the arm, and pulling by the crotchet, the delivery muſt, in that manner, be accompliſhed: a mode of practice which ſhould only be had recourſe to when the pelvis is faulty, or the patient's life in immediate danger.

In the longitudinal contraction of the uterus, when an arm preſents, and the ſhoulder is advanced in the paſſage, ſo that the feet cannot eaſily be come at, Dr Denman adviſes "to pull the body lower down "by the arm, and the difficulty will be "leſſened, or removed." "There is, hap-"pily (he adds), no neceſſity of turning "the child in theſe circumſtances; for it "will be born by the effect of the powers "of nature only. In ſuch caſes the child "does not come double, but the *breech* is "the firſt part delivered, and the *head* the "laſt, the body turning upon its own axis." He adopts this opinion from four caſes which occurred in his own practice, and ſeveral ſimilar hiſtories related by others;

in

in all which, however, the child was dead.

He therefore infers, "That, in cafes in "which children prefent with the arm, "women would not neceffarily die undelivered, tho' they were not affifted by art."

He concludes his obfervations with this important remark.

"The benefit we are to derive in practice from the knowledge of this fact is, "that the cuftom of turning and delivering by the feet, in prefentations of the "arm, will remain neceffary and proper "in all cafes in which the operation can "be performed with fafety to the mother, "and give a chance of preferving the life "of the child; but, when the child is dead, "and when we have no other view, but "merely to extract the child, to remove "the danger thence arifing to the mother, "it is of great importance to know, that "*the child may be turned fpontaneoufly by the* "*action of the uterus* *."

Dr

* See Dr DENMAN's Aphorifms refpecting the Diftinction and Management of Preternatural Prefentation.—A fmall fyllabus which contains fome of the moft important practical rules of the art.

Dr DENMAN's remark is new to me. In a caſe where the powers of nature have been uſually conſidered as deſperate, it is new, perhaps, only becauſe the practitioner has thought it uſeleſs to wait for them. But though curious, as it ſhows what nature in her ſtruggles can perform; and though ſurpriſing, as it apparently contradicts the laws of motion; it ſeems to me unneceſſary, as in the numerous arm-preſentations which I have attended, the child has for the moſt part been preſerved, and the woman has ſeldom ſuffered any material injury from the delivery. I have therefore continued to practiſe the method which I have juſt recommended; and, in the moſt intricate preſentations, have generally ſucceeded in making the delivery by fixing a fillet on the arm, and altering the poſition in the manner mentioned, when every other method had failed. I have never yet known a caſe to occur where the pelvis was tolerably proportioned, in which I could not either obtain acceſs to the feet to deliver by turning, or reduce the arm and bring down the head; and have, in

ſeveral

feveral cafes, fuccefsfully turned where the pelvis was confiderably diftorted *.

It may be neceffary, however, to ftate the principles of this operation, that we may be aware how far to truft the unaffifted efforts of the conftitution.

The longitudinal contraction of the uterus, is one of thofe blind and indifcriminate attempts which nature fometimes makes to free herfelf from a burden. When her powers are exhaufted, thefe efforts are diminifhed, and the uterus is relaxed. In thefe circumftances, then, if we can fix the arm, the body will of itfelf turn as on an axis;

* In prefence of the Gentlemen who attended my Lectures laft fummer, I delivered a woman in the public lying-in ward, Royal Infirmary; the circumftances of the cafe were as follows.

The arm of the child prefented, and had been in the paffage, with the waters drained, from the preceding evening. The pelvis was confiderably diftorted, and the crotchet had been ufed in her former deliveries. The woman is of an under-fize, of a feeble conftitution, and the paffages were fo tight as to cramp the hand when introduced into the pelvis. By gradual ftretching, and gentle infinuation, I with fome difficulty reached a foot, and accomplifhed the delivery without the affiftance of any inftrument.

axis; and the *heavier* part, or the breech, will come downward and be delivered: The arm is *fixed* by drawing down the ſhoulder; but it will be obvious, that the natural falling down of the breech will immmediately draw it back again; and it is in this way that the child does not *ultimately* come down double. This operation can be eaſily imitated on machinery, if the aperture is conical to fix that part which repreſents the arm; and it is in this way clear, that the contradiction to the laws of motion is apparent only.

In the manner we have juſt ſtated, this mode of delivery may ſeem to be preferable; but various circumſtances diminiſh its advantages. Dr DENMAN has very properly limited it to the delivery of a dead child, and we may add a well-proportioned pelvis: but, even there, we exhauſt the powers of nature, without an adequate advantage; eſpecially if we reflect, that, in this exhauſted ſtate, an inconſiderable increaſe of the uſual diſcharges may prove fatal.

Theſe facts may, however, teach us, not to attempt the extraction by turning too early;

early; for by a little delay till the ftrong pains are abated, it will be more practicable, and my fuccefs has fully confirmed its fafety.

When both arms prefent, the delivery muft be conducted much in the fame manner as when one only prefents. The former cafe is nearly as eafily managed as the latter, as the head feldom advances far in that pofition, being locked in the pelvis, as it were, by two edges; fo that the arms can either be reduced, with a view to bring down the head, or there will be eafy accefs to come at the feet, to bring them down, and deliver *.

CLASS IV.

Method of turning the Child while the Membranes are whole, or foon after their rupture.—Method of Delivery in Flooding Cafes, and when the Navel-ftring prefents.

WHEN the membranes remain entire till the foft parts of the mother are fo

* During an extenfive practice, I have only feen two inftances in which *both arms* prefented; and they occurred in Twin Cafes.

ſo much dilated, that the hand of the operator can readily find admittance; or when the hand can be paſſed within the uterine cavity, immediately after the membranes break, ſo that great part of the water may be retained; the delivery may be accompliſhed, in the moſt unfavourable caſes, with eaſe and ſafety. But, when the waters have been long evacuated, and the uterus is rigidly contracted round the body of the child, the caſe will prove laborious to the operator, painful to the mother, and dangerous to her and the child.

When there is reaſon to ſuſpect a croſs birth, which can often be known, either by feeling the preſenting part through the membranes, or by ſome of the ſigns already mentioned, the woman ſhould be managed in ſuch a manner that the membranes may be preſerved as long as poſſible; for this purpoſe ſhe ſhould be kept quiet in bed, and placed in that poſture leaſt favourable for ſtraining, or the exertion of force, in the time of a pain. She ſhould be touched as ſeldom as poſſible, till the orificium uteri be ſufficiently dilated. She ſhould then

then be placed in a proper poſition for delivery, that the hand of the operator may be gently inſinuated in a conical form, with the fingers gathered together, through the vagina into the uterus. The hand muſt be paſſed on the outſide of the membranes between and the uterus, in a direction towards the fundus. The membranes may then be broken, by pinching them between a finger and thumb, or by forcibly thruſting a finger againſt them in time of a pain. The hand muſt now be directed where the feet may reaſonably be expected to lie; one or both of which muſt be taken hold of, and brought down. If the membranes ſhould be ruptured in the attempt, the hand muſt be paſſed up into the uterus as expeditiouſly as it can be done with ſafety. Part of the waters being thus retained by the introduced arm, the operation of turning will be greatly facilitated.

If the membranes ſhould be ruptured before the orificium uteri be ſufficiently opened to allow the hand to paſs, even in theſe circumſtances, it is neceſſary that the woman be kept quiet in bed, and the ſame

precautions ſhould be uſed as if the membranes were entire; for the retention of a ſmall quantity of water is of great conſequence in turning.

After the hand is introduced into the cavity of the uterus, if the placenta ſhould be found to adhere at that ſide, and to interrupt the hand of the operator from paſſing, it muſt be withdrawn, and the other hand be introduced at the oppoſite ſide.

Method of Delivery in Flooding Caſes.

FLOODINGS, as already explained, proceed from a ſeparation of ſome portion of the placenta, or ſpongy chorion, from the internal ſurface of the uterus. But the moſt dangerous hæmorrhagies ariſe from a ſeparation of the cake when attached to the cervix, or over the orificium uteri*.

Floodings, before the 7th month of geſtation, may be often checked by the management formerly directed; after which period, however, there is always conſider-

* See the article *Flooding* in Pathology of Parturition.

able danger. And, as it is ſometimes neceſſary to deliver, even when no part of the placenta can be reached with the finger, the conſtant attendance of the practitioner is requiſite, and the utmoſt judgment to catch the proper time of proceeding.

There is hazard in attempting delivery too early, while the os uteri is cloſe and rigid. When the woman, from loſs of blood, is ſomewhat ſunk, the uterine orifice is more relaxed and dilatable. The time can only be determined by conſtantly ſtaying with the patient, and examining the ſtate of the os uteri occaſionally. In ſo critical a ſituation, the neglect of half an hour, or leſs, may be fatal to the mother and child,

The beſt practice in this caſe is, firſt, to wait on; giving opiates at proper intervals, and keeping the woman quiet and cool. If poſſible, delivery ſhould never be attempted till pains occur, and the membranes begin to protrude. Pains may be brought on, or increaſed, by gently irritating the os tincæ. The membranes may then be broken by puſhing a finger, or the catheter, thro' them; the water guſhing out, the womb contracts

and ſtops the bleeding. We can now ſafely wait for ſix, twelve, or twenty-four hours, if neceſſary, till the pains recur, and then deliver according to the preſentation. But, if the flooding ſhould not then abate, or if the poſition of the fœtus be unfavourable, the hand muſt be paſſed into the uterus, the feet of the child taken hold of and brought down. The uterus now contracting, ſoon ſtops the flow of blood, or prevents an exceſſive diſcharge: therefore, after the feet are brought down, the body of the child ſhould be extracted by very ſlow and gradual efforts; leſt, from too ſudden evacuation of the uterine contents, fatal faintings or convulſions might enſue.

Flooding, from the *attachment of the placenta at the orificium uteri*, will be ſufficiently indicated by its alarming appearance and rapid increaſe, and by the ſoft pappy feel of the cake to the touch; though, when there is little dilatation of the os tincæ, it will be neceſſary to introduce the whole hand into the vagina, in order, more certainly, to be able to feel the

placenta

placenta with a finger introduced within the os internum.

In theſe unhappy caſes, there is no method of ſaving the woman, but by immediate delivery.

We are ſometimes obliged to paſs the hand at an opening made through the body of the placenta; but, if poſſible, the hand ſhould rather be inſinuated at the ſide of the cake, where the leaſt portion is attached, to go into the uterus, break the membranes, ſearch for the child's feet, bring them down, and deliver.

In ſome inſtances, before the orificium uteri can be ſufficiently opened to admit the hand of the operator to paſs, the whole cake will actually be diſengaged and protruded; but the ſeparation and expulſion of the placenta, previous to the birth of the child, is, for the moſt part, fatal to the mother.

Much of our ſucceſs, in theſe alarming caſes of flooding, will depend on *ſtaying with the woman*, and trying the *dilatability* of the orificium uteri from time to time: for, after ſhe is ſunk to a certain degree, the

muſcular fibres of that organ loſe their contractile power, the flow of blood increaſes, and, if neglected, ſhe ſoon dies; ſo that the preſence of the operator can only ſave her*.

In caſes ſo ſtrictly critical and hazardous, two practitioners ſhould therefore be called, for *one* ought to be in conſtant waiting.

Prolapſed Funis—A preſſure on the umbilical cord, perhaps for ten minutes, by interrupting the circulation, will be ſufficient to deſtroy the life of the child. A coldneſs and want of pulſation in the cord, is the moſt infallible ſign of the child's death; therefore, if any portion of the former be protruded before any bulky part of the child, there is hazard of the loſs of the child, unleſs the labour be ſoon over. The danger can only be prevented by re-placing the cord, and retaining it above the preſenting part of the child, till it be ſo far protruded by the force of the

* See Mr RIGBY's valuable Treatiſe on this Subject already referred to.—See alſo Dr LEAK's Obſervations on the nature and Treatment of Uterine Hæmorrhagies before and after delivery. Practical Obſervations on the child-bed Fever, &c. 5th Edition, p. 258.

the pain, as to prevent the return of the cord; or, the child muſt be turned and delivered by the feet, (for the forceps cannot be uſed till the head be well advanced in the pelvis.) But it is often difficult to reduce the cord, and much more ſo to turn the child. For, if the pains be ſtrong and frequent, the conſequence of ſuch attempts may be fatal to the mother.

If the child be of an ordinary, or ſmall ſize, and the pelvis be well formed; if the labour goes on quickly, and eſpecially if the woman had formerly good deliveries; the child may yet be born alive. If, on the contrary, the child exceeds the ordinary ſize, or the pelvis comes ſhort of its uſual dimenſions, turning would prove a dangerous operation to the mother, and there is little proſpect of ſaving the infant by it.

The beſt practice, therefore, is to take the earlieſt opportunity that the circumſtances of the caſe will admit of, to reduce the cord, by placing the woman in a proper poſition, ſo that the hand of the operator may be carried up, in the abſence of pain,

into the pelvis, and the cord entirely reduced. If this method fails,—and it cannot be practiſed when the pains are ſtrong and frequent, or the head wedged in the pelvis, no farther attempts ſhould be made; and the child ſhould be allowed to be propelled by the natural pains, or protruded ſo low that the forceps can be uſed.

CHAP. IV.

Plurality of Children; Monſters; Extra-uterine Fœtuſes.

I. PLURALITY *of* CHILDREN.

ALTHOUGH women commonly produce one child only at a birth, yet the uterus is capable of containing ſeveral.

Caſes of twins often occur, of triplets ſeldom, of four children very rarely*; and there are few inſtances of five fœtuſes at one

* Three years ago I attended a woman in the Graſs Market, who brought forth *four children* at a birth between the 6th and 7th months. Three were born alive, and one was dead. This is the only inſtance of the kind ever known to have occurred in Edinburgh.

one birth, notwithſtanding the fabulous hiſtories which have been related by credulous authors.

It is very difficult to judge of the exiſtence of twins or triplets, from appearances previous to delivery; for all the ſigns enumerated are fallacious.

When there is reaſon to ſuſpect that there is another child, after the delivery of the firſt, it ought to be aſcertained by paſſing a finger within the os uteri; or, if that is inſufficient, by the introduction of the hand.

The ſymptoms chiefly to be truſted, after the birth of one child, are,

1ſt, The diminutive ſize of the child, and the waters being diſproportioned to the diſtention of the gravid uterus.

2dly, The umbilical cord, after it is divided, continuing to bleed beyond the uſual time.

3dly, The recurrence of regular labour-pains.

4thly, The retention of the placenta.

5thly, The abdominal tumor not ſenſibly

diminiſhed between the ſtomach and umbilicus.

All theſe ſymptoms are ſeldom united; and ſeveral of them are, by themſelves, fallacious: for the placentæ of twins are often diſtant from each other in the uterus, and ſo looſely connected to it, that one may entirely ſeparate before the ſecond child be born; ſo that labour-pains will ſometimes ceaſe for two or three days, and there is the ſame interval between the births of the children.

It is neceſſary, therefore, to attend to the uſual diminution of the belly; and, in doubtful caſes, to introduce the hand into the uterus.

The poſition of twins or triplets is commonly that which is moſt commodiouſly adapted to the uterus, and which will occupy the leaſt room. One child often preſents naturally; the other, or others, by the feet or breech; ſometimes both, or all, preſent naturally: at other times, the poſition is croſs: ſo that the delivery muſt be regulated by the preſentation.

With

With regard to the management, oppofite fentiments have been entertained

In fome inftances, natural pains, after the delivery of the firft child, foon come on. The membranes will then be quickly forced down, and the prefenting part of the child may be readily felt through them; but, if the prefentation of the child fhould be doubtful to the touch, the practitioner ought immediately to place the woman in a proper pofition, and gently infinuate his hand, by the fide of the membranes, into the uterus, and examine how the child lies. If the head or breech prefent, it is only neceffary to break the membranes, withdraw the hand, and leave the child to be expelled by the natural pains. If the feet are felt through the membranes, let them be broken, the feet taken hold of, and brought into the paffage. The delivery muft be otherwife managed as directed in footling cafes, carefully obferving not to neglect the proper turns in extracting the body.

If any other part than the head, breech, or feet fhould prefent, the latter muft be fearched for through the membranes, and brought

brought down into the paſſage. The feet may, by a dexterous operator, in moſt caſes, be brought down without breaking the membranes; but, if they ſhould be ruptured in the attempt, the feet muſt then immediately be taken hold of, gently brought down, and the dilivery finiſhed as formerly directed.

When the uterus is very much diſtended, it, in ſome degree, loſes its power of contraction. From this cauſe the pains are often leſs ſtrong and forcing, and the labour is more tedious, in twins and triplets, than when there is but one child; hence a conſiderable length of time, as ſeveral days, in ſome inſtances, intervenes between the birth of the different children. In this interval, the woman is apt to ſuffer from impatience and anxiety. Floodings frequently come on; and the labour is more painful aud hazardous, in proportion as the time of delivery is protracted. It may therefore be recommended to practitioners as a general rule, If labour-pains do not naturally recur ſoon after the birth of the firſt child, to place the woman in a proper poſition

poſition, gently paſs the hand into the uterus, break the membranes, and manage the delivery according to the preſentation.

As this ſubject has given riſe to a variety of opinions among authors, we ſhall add, for the inſtruction of young practitioners, a few rules, which include the whole directions neceſſary for the management.

Rules for Delivery, in caſes of Twins, Triplets, &c.

1. If a ſecond child be ſuſpected, let a ligature immediately be made on the end of the umbilical cord next the mother, leſt, the two placentæ being connected, the cord ſhould continue to bleed.

2. Having waited the uſual time, as if for the ſeparation of the placenta, and it appears to adhere firmly, let a finger be paſſed up by the ſide of the cord, to examine whether there is another ſet of membranes.

Some part of the former water may be retained within a fold of the membranes, and,

and, protruding at the orifice of the uterus, may be miſtaken by an inexperienced practitioner for a ſecond ſet of membranes: but the diſtinction may readily be made by moving the finger round and round the protruding bag; or, if it be ſtill doubtful, the hand muſt be paſſed into the uterus.

When it is aſcertained that there is any other child, the accoucheur ſhould ſtay with his patient, as if waiting for the ſeparation of the placenta, and carefully obſerve leſt a flooding ſhould occur.

4. A gentle compreſſion ought to be made on the abdomen, which muſt be gradually tightened as the uterine tumor ſubſides.

5. If pains ſoon come on, and the child preſents in a poſition in which it can advance without manual aſſiſtance, let it be expelled by the natural pains. If it comes double, or by the feet, when the breech is advanced as far as the os externum, let the proper turns be carefully attended to.

6. If labour-pains do not occur within the ſpace of a few hours after the delivery of the firſt child, it will then be adviſable

visable to place the woman in a conveni-ent position for delivery, to pass the hand into the uterus, break the membranes, and otherwise manage the delivery as already directed. For, if pains do not soon come on, the woman may go on undelivered for several days, unless the membrames be bro-ken. When the waters are evacuated, the uterus contracts, and the child quickly advances.

If the pains be trifling, and have little effect in protruding the child, the same management will be necessary.

7. If, from the very small size of the first and second child, there may be reason to suspect that any other yet remains; after having waited about half an hour for the separation of the placenta, without effect, let the hand be again passed into the ute-rus, and if a third set of membranes be discovered, let them be broken, and the delivery managed as already directed. If there be no other child, let the placentæ be disengaged and extracted. But if they adhere firmly, it is better to keep the hand in the uterus, till by its contraction they are

are gradually ſeparated and diſengaged rather than to attempt it by force.

8. The placentæ of twins and triplets are often connected, and adhere at the edges, though each child has its diſtinct membranes and water.

When they adhere at the ſides, they ſeparate, and are expelled together, after the birth of the laſt of the children. But, when they are attached in different portions to the uterus, the placenta frequently follows the birth of that child to which it belonged, before the ſecond labour enſues.

9. When another child is diſcovered, no attempt ought to be made to remove the placenta, before the delivery of the remaining child or children; ſuch attempts would expoſe the woman to the hazard of flooding, which might end fatally before the uterus could be emptied of its contents.

10. The placentæ of twins, or triplets, generally ſeparate eaſily, provided that time be given for the contraction of the uterus. Each cord ſhould be cautiouſly pulled, ſometimes alternately, ſometimes pulling by both,

or by all at once, deſiring the woman to aſſiſt gently by her own efforts.

When the bulky maſs advances as far as the os tincæ, the reſiſtance occaſioned by the contracting orifice muſt be removed, by the introduction of a finger or two within the paſſage, to bring down the edge: the ſubſtance of the cake is then to be graſped firmly, and the whole entirely extracted.

When they adhere in diſtinct portions, they muſt be ſeparated, one after another, and removed.

11. If flooding ſhould occur, or any of thoſe obſtacles to expulſion, formerly mentioned, the hand muſt be conducted into the uterus, and the ſeparation and extraction of the placentæ accompliſhed agreeably to the directions already given.

II. Monsters.

These are of various ſizes and forms; and, unleſs very ſmall, the preſentation favourable, and the woman well made, will prove the cauſe of a difficult and troubleſome delivery. Sometimes a child is monſtrous, from a preternatural conformation of

of parts; ſuch as a monſtrous head, thorax, abdomen, &c. at other times, there is a double ſet of parts; as two heads, two bodies with one head, four arms, legs, &c. But ſuch appearances very ſeldom occur in practice; and, when they do, the delivery muſt be regulated entirely according to the circumſtances of the caſe. A large head, thorax, or belly, muſt be opened. If two bodies united, or one body with ſupernumerary limbs, form too bulky a maſs to paſs entire, they muſt be ſeparated. If the poſture be unfavourable, it muſt be reduced when practicable; otherwiſe the extraction muſt be made with the crotchet in the beſt manner the particular circumſtances of the caſe will admit of.

III. Extra-uterine Foetuses.

When nature points it out, by a local inflammation or abſceſs, the fœtus, or bones of the fœtus, may be cut upon and extracted; but otherwiſe the Surgeon's art will not avail, and every treatment is improper.*

* Vide *Ventral Conception*, p. 334.

APPENDIX.

THE greateſt part of the preceding work, in the former Edition, having been printed before Dr Oſburne's Treatiſe came into my hands, I then took the earlieſt opportunity to acknowledge the polite and reſpectful manner with which that gentleman expreſſed his ſentiments on ſome ſubjects in which we ſeem to have differed in opinion.

The firſt attempt of an author, in the infancy of practice and teaching, muſt be rude and imperfect: frequent reflection from reading and experience, enable him to detect the errors of others, and to guide his own ſteps with caution and ſafety. The elements of Midwifery were originally intended as a very ſhort ſyllabus for the uſe of the Author's ſtudents only. It

was begun and carried on in a hurry, having been actually written and published in little more than two months. The supplement, designed to supply the omissions in the text, shows that the Author was sensible of the deficiency of the former part.

As our opinions, at present, more nearly coincide, it is unnecessary to trouble Dr Osburne or the Public with any pompous, laboured reply: I shall, therefore, confine myself to a few observations on those remarks in his publication, in which I myself, only, am concerned.

1. Dr Osburne (page 69,) condemns the practice of fixing the crotchet *somewhere on the outside of the skull.* This, however, was the practice, even in London, when I attended an eminent teacher not a great many years ago. It was the practice of Dr Smellie; and more lately of Dr Young, late professor in this university, an operator as skilful and successful as any of the former. The construction of that instrument plainly shows, that it was originally intended

to be fixed *on the outſide of the ſkull chiefly.* The concavity of the blade is exactly adapted to the convexity of the child's head. But I have already obſerved, in this volume, that the crotchet ſhould be fixed in the *baſis of the ſkull*; though there are ſome caſes in which it may ſtill be proper ſometimes to fix it on the outſide. An experienced operator can, however, decide on this point, after he has maturely conſidered the circumſtances both of the preſentation and pelvis.

2. The calculation of the ſucceſsful caſes, in which the Cæſarean operation was performed, were taken from old authors, excluſive of unfortunate caſes in Britain; and the author candidly acknowledges the miſtake into which they had led him. He cannot avoid, however, expreſſing his ſurpriſe, that Dr Oſburne ſhould have ſo far miſunderſtood his meaning, as to inſinuate, that he would ever recommend the operation to be performed on the living ſubject, except in thoſe rare caſes where it appeared abſolutely impoſſible to extract

a child through the aperture of the pelvis *: And to a deficiency of space in the bony

* "When the hand of the operator cannot be introduced within the pelvis; or, in other words, when its largest diameter does not exceed one inch, or one inch and a half: this conformation is perhaps the only one which renders the Cæsarean operation absolutely necessary. Happily, however, such a structure very seldom occurs in practice; and, when it does, the Accoucheur will readily discover it by attending to the following circumstances, and to the common marks of a narrow pelvis. Wherever the capacity of the pelvis is so strait as not to admit any part of the child's head to enter, nor of two fingers of the Accoucheur's hand to conduct proper instuments to tear, break down, and extract the child piece-meal, in this case recourse must be had to the Cæsarian section: an expedient, though dreadful and hazardous, that will give the woman and child the only chance of life; and which, if timely and prudently conducted, notwithstanding the many instances wherein it has failed, may be performed with great probability of success." *Elements of Midwifery*, p. 241.

And, lest he had not formerly been sufficiently explicit, the following caution is subjoined in the Supplement.

"The absolute impracticability of extracting a child through the aperture of the pelvis, is perhaps the only circumstance that justifies the performance of the

bony cavity alone, he expreſsly confines it; viz. "where the tranſverſe diameter, at "the brim, meaſures from one to, not "exceeding, two inches."

His motives for mentioning the caſes in which the operation had been performed, were to ſhow from authentic records, that however formidable and hazardous, it is certainly practicable; and to regret the imperfection of an art which obliges us, *ſometimes*, to have recourſe to the dreadful alternative of witneſſing the unſucceſsful efforts of Nature in her laſt feeble ſtruggles; or, by a deſperate effort of the limited powers of ſurgery, offer our aſſiſtance.

Dr Oſburne aſſerts, "that a child can "be extracted by embryulcia, through a "pelvis whoſe aperture from pubes to ſa-"crum meaſures only one inch and a "half; dimenſions much leſs than what "have invariably been ſuppoſed to re-"quire the Cæſarean operation, even in the "lateſt

the Cæſarean operation on the living ſubject; which ought never to be had recourſe to in caſes of diſeaſes, or original mal-conformation of the ſoft parts of generation, when there is no ſuſpicion of deformity of the bones." *Elements of Midwifery*, p. 292.

"latest and best books*." And by this means he hopes to diminish, "if not supersede, the necessity of the Cæsarean section, by substituting the crotchet in its stead. He goes further, and endeavours to prove, (p. 251 and 252,) "that the head of a mature fœtus may be safely extracted with the crotchet, its volume having been previously lessened, wherever there is a space equal to one inch and a half from pubes to sacrum:" And asserts, "that, in these circumstances, delivery may be *always* affected with safety to the mother."

The world is infinitely obliged to this author for the uncommon pains he hath taken to show "what are the smallest possible dimensions of the pelvis through which a child, with its head opened, can be extracted, with safety to the mother, by means of the crotchet." I hope, and earnestly wish, for the honour of the profession, and the credit of Dr Osburne, that his

* See Dr OSBURNE's Treatise on Laborious Parturition, p. 251.

his data may be well-grounded, and that the result may prove adequate to his expectations.

But, though the dimensions of the pelvis may be capable of mensuration with mathematical precision, yet the difference in the bulk and solidity of childrens heads cannot so easily be ascertained; nor can I entirely agree with Dr Osburne when he says, (p. 27,) "We are in possession, however, of the means of determining it with "exactness sufficient to direct our practice "in the safest and best manner."

The case of Elizabeth Sherwood, (p. 73,) shows the possibility of performing delivery with the crotchet, in circumstances hitherto deemed unfavourable and desperate. But, in a pelvis of a similar construction, various causes may concur to disappoint our views, and baffle our attempts; or, from the obstacles that necessarily occur, delivery must always be precarious in the consequences; and this will diminish the value of the advantages we might otherwise expect to derive from this important discovery.

To conclude: Though we allow the whole of Dr Osburne's postulata, it must still be acknowledged, that cases of narrowness from distortion sometimes, though seldom, do occur, in which a dead child cannot be extracted by the scissars and crotchet, even in the hands of the most skilful and dexterous practitioner.—Shall we, *then*, be unconcerned spectators of the fatal event that must ensue? Or, shall we dare to interfere; and, by an operation apparently cruel, and from its consequences desperate, make a last effort of that assistance which our limited art affords in behalf of our patient*?

* I have been just informed, on authority which I trust, of a work lately published on the Continent, which contains many cases of utility of the *division of the pubes*, where "a considerable space was gained by the operation."—The account of this publication hath not yet appeared in any of the foreign Journals.

FINIS.

PRINTED BY MACFARQUHAR AND ELLIOT.